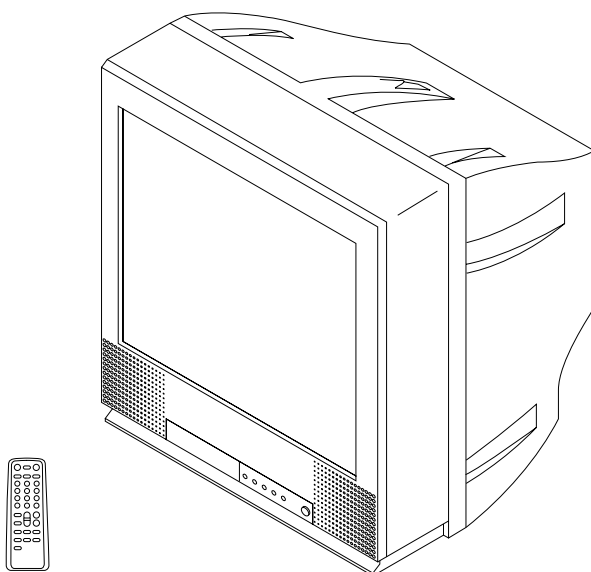


SERVICE MANUAL

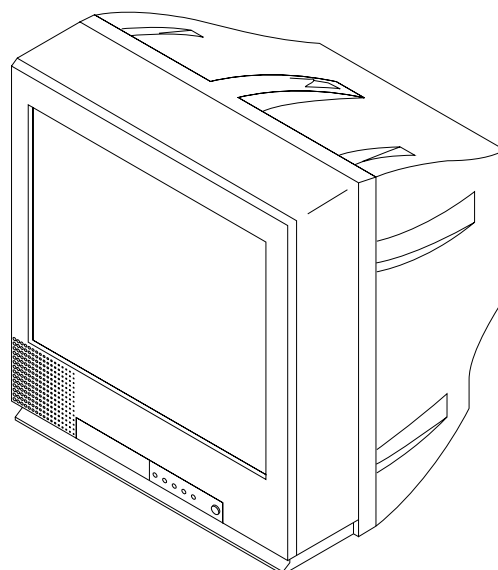
BG-3S CHASSIS

| <u>MODEL</u> | <u>COMMANDER</u> | <u>DEST.</u> | <u>CHASSIS NO.</u> |
|-------------------|------------------|------------------|--------------------|
| <i>KV-PF21M70</i> | <i>RM-952</i> | <i>Hong Kong</i> | <i>SCC-U17H-A</i> |
| <i>KV-TF21M61</i> | <i>RM-952</i> | <i>Singapore</i> | <i>SCC-U29A-A</i> |
| <i>KV-TF21M90</i> | <i>RM-952</i> | <i>Hong Kong</i> | <i>SCC-U17G-A</i> |
| <i>KV-TF21P11</i> | <i>RM-952</i> | <i>OCE</i> | <i>SCC-U24C-A</i> |

| <u>MODEL</u> | <u>COMMANDER</u> | <u>DEST.</u> | <u>CHASSIS NO.</u> |
|--------------|------------------|--------------|--------------------|
|--------------|------------------|--------------|--------------------|



(KV-TF21M61)
(KV-TF21M90)
(KV-TF21P11)



(KV-PF21M70)



TRINITRON® COLOR TV
SONY®

SPECIFICATIONS

| | | Note |
|---------------------------------|--|-------------------------|
| Power requirements | 110-240 V AC, 50/60 Hz | KV-TF21M61 |
| | 110-220V AC, 50/60Hz | KV-PF21M70 |
| | 220-240V AC, 50/60Hz | KV-TF21M90/TF21P11 |
| Power consumption (W) | Indicated on the rear of the TV | |
| Television system | B/G, I, D/K, M | Except KV-TF21P11 |
| | B/G | KV-TF21P11 |
| Color system | PAL, PAL60, SECAM, NTSC4.43, NTSC3.58 | Except KV-TF21P11 |
| | PAL, PAL60, NTSC4.43, NTSC3.58 (AV IN) | KV-TF21P11 |
| Stereo/Bilingual system | NICAM Stereo/Bilingual B/G, I; A2 Stereo/Bilingual (German) B/G | KV-TF21M61/TF21M90 only |
| Teletext language | English, Arabic, French | KV-TF21M61/TF21P11 only |
| Channel coverage B/G | VHF : E2 to E12/ UHF : E21 to E69/ CATV : S01 to S03, S1 to S41 | |
| | VHF : 0 to 12, 5A, 9A UHF : 28 to 69 CATV : S01 to S03, S1 to S41 | Australia only |
| | VHF : 1 to 11 UHF : 21 to 69 CATV : S01 to S03, S1 to S41 | New Zealand only |
| | | |
| I | UHF : B21 to B68/ CATV : S01 to S03, S1 to S41 | |
| D/K | VHF : C1 to C12, R1 to R12/ UHF : C13 to C57, R21 to R60 CATV: Z1 to Z39, S01 to S03, S1 to S41 | |
| M | VHF : A2 to A13/ UHF : A14 to A79/ CATV : A-8 to A-2, A to W+4, W+6 to W+84 | |
| ⌵ (Antenna) | 75-ohm external terinal | |
| Audio output | 3W + 3W | KV-TF21M61/TF21M90 |
| | 3W | KV-PF21M70/TF21P11 |
| Number of terminal 📺 (Video) | Input : 3 Output : 1 Phono jacks; 1 Vp-p, 75 ohms | Except KV-TF21P11 |
| | Input : 2 Output : 1 Phono jacks; 1 Vp-p, 75 ohms | KV-TF21P11 |
| 🎵 (Audio) | Input : 3 Output : 1 Phono jacks; 500 mVrms | Except KV-TF21P11 |
| | Input : 2 Output : 1 Phono jacks; 500 mVrms | KV-TF21P11 |
| 🎧 (Earphone) | Output : 1 Minijack | KV-PF21M70/TF21P11 |
| 🎧 (Headphone) | Output : 1 Minijack | KV-TF21M61/TF21M90 |
| Picture tube | 21 inch | |
| Tube size (cm) | 54 | Measured diagonally |
| Screen size (cm) | 51 | Measured diagonally |
| Dimension (w/h/d, mm) | 490 x 458 x 487 | |
| Mass (kg) | 28 | |

Design and specifications are subject to change without notice.

CAUTION

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON PAINTED ON THE CRT, AFTER REMOVING THE ANODE.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

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SELF DIAGNOSTIC FUNCTION

The units in this manual contain a self-diagnostic function. If an error occurs, the STANDBY/TIMER lamp will automatically begin to flash.

The number of times the lamp flashes translates to a probable source of the problem. A definition of the STANDBY/TIMER lamp flash indicators is listed in the instruction manual for the user's knowledge and reference. If an error symptom cannot be reproduced, the remote commander can be used to review the failure occurrence data stored in memory to reveal past problems and how often these problems occur.

1. DIAGNOSTIC TEST INDICATORS

When an errors occurs, the STANDBY/TIMER lamp will flash a set number of times to indicate the possible cause of the problem. If there is more than one error, the lamp will identify the first of the problem areas.

Result for all of the following diagnostic items are displayed on screen. No error has occurred if the screen displays a "0".

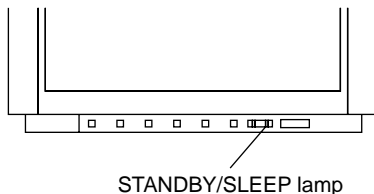
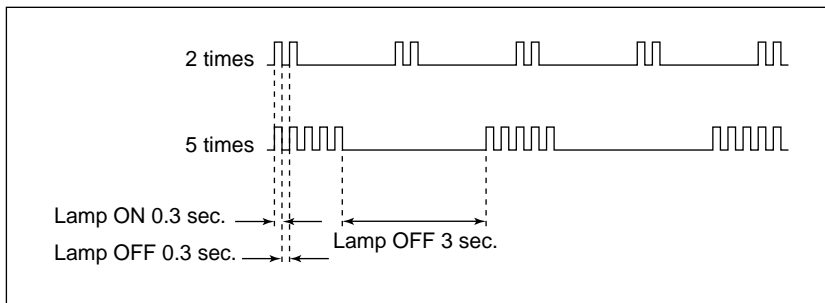
| Diagnostic Item Description | No. of times STANDBY/TIMER lamp flashes | Self-diagnostic display/Diagnostic result | Probable Cause Location | Detected Symptoms |
|---|---|---|---|---|
| • Power does not turn on | Does not light | — | <ul style="list-style-type: none"> • Power cord is not plugged in. • Fuse is burned out F4601 (F Board) | <ul style="list-style-type: none"> • Power does not come on. • No power is supplied to the TV. • AC power supply is faulty. |
| <ul style="list-style-type: none"> • +B overcurrent (OCP) or overvoltage (OVP) • Vertical deflection stopped • Horizontal deflection overdrive | 2 times | 002:000 or 002:001~255 003:001~255 004:001~255 at the same time | <ul style="list-style-type: none"> • H.OUT Q511 is shorted. (A board) • IC1800 is shorted. (C5 board (except PF21M70)/ (C3 Board (KV-PF21M70))). • -13V is not supplied. (A board) • IC 503 faulty (A board) • IC 301 faulty (A board) | <ul style="list-style-type: none"> • Power does not come on. • Load on power line is shorted. • Has entered standby state after horizontal raster. • Vertical deflection pulse is stopped. • Power line is shorted or power supply is stopped. |
| • White balance failure (no PICTURE) | 5 times | 005:000 or 005:001~225 | <ul style="list-style-type: none"> • G2 is improperly adjusted. (Note 2) • CRT problem. • Video OUT IC701 is faulty. (C5 board) • IC301 is faulty. (A board) • No connection A board to C5/C3 boards. | <ul style="list-style-type: none"> • No raster is generated. • CRT cathode current detection reference pulse output is small. |
| • Micro reset | — | 101:00 or 101:001~225 | <ul style="list-style-type: none"> • Discharge CRT (C5/C3 Boards) • Static discharge • External noise | <ul style="list-style-type: none"> • Power is shut down shortly, after this return back to normal. • Detect Micro latch up. |

Note 1: If a + B overcurrent is detected, stoppage of the vertical deflection is detected simultaneously.

The symptom that is diagnosed first by the microcontroller is displayed on the screen.

Note 2: Refer to screen (G2) Adjustment in section 3-4 of this manual.

2. DISPLAY OF STANDBY/TIMER LIGHT FLASH COUNT



| <u>Diagnostic Item</u> | <u>Flash Count*</u> |
|---|---------------------|
| +B overcurrent/overvoltage Vertical deflection stopped | 2 times |
| White balance failure | 5 times |

* One flash count is not used for self-diagnostic.

3. STOPPING THE STANDBY/TIMER FLASH

Turn off the power switch on the TV main unit or unplug the power cord from the outlet to stop the STANDBY/TIMER lamp from flashing.

4. SELF-DIAGNOSTIC SCREEN DISPLAY

For errors with symptoms such as “power sometimes shuts off” or “screen sometimes goes out” that cannot be confirmed, it is possible to bring up past occurrences of failure for confirmation on the screen:

[To Bring Up Screen Test]

In standby mode, press buttons on the remote commander sequentially in rapid succession as shown below:

Screen display ➡ channel [5] ➡ Sound volume [-] ➡ Power ON



Note that this differs from entering the service mode (mode volume [+]).

Self-Diagnosis screen display

| SELF DIAGNOSTIC | |
|-----------------|---|
| 002 : 000 | ← |
| 003 : 000 | |
| 004 : 000 | |
| 005 : 001 | ← |
| 101 : 000 | |

Numeral "0" means that no fault has been detected.

Numeral "1" means a fault has been detected.

5. HANDLING OF SELF-DIAGNOSTIC SCREEN DISPLAY

Since the diagnostic results displayed on the screen are not automatically cleared, always check the self-diagnostic screen during repairs. When you have completed the repairs, clear the result display to “0”.

Unless the result display is cleared to “0”, the self-diagnostic function will not be able to detect subsequent faults after completion of the repairs.

[Clearing the result display]

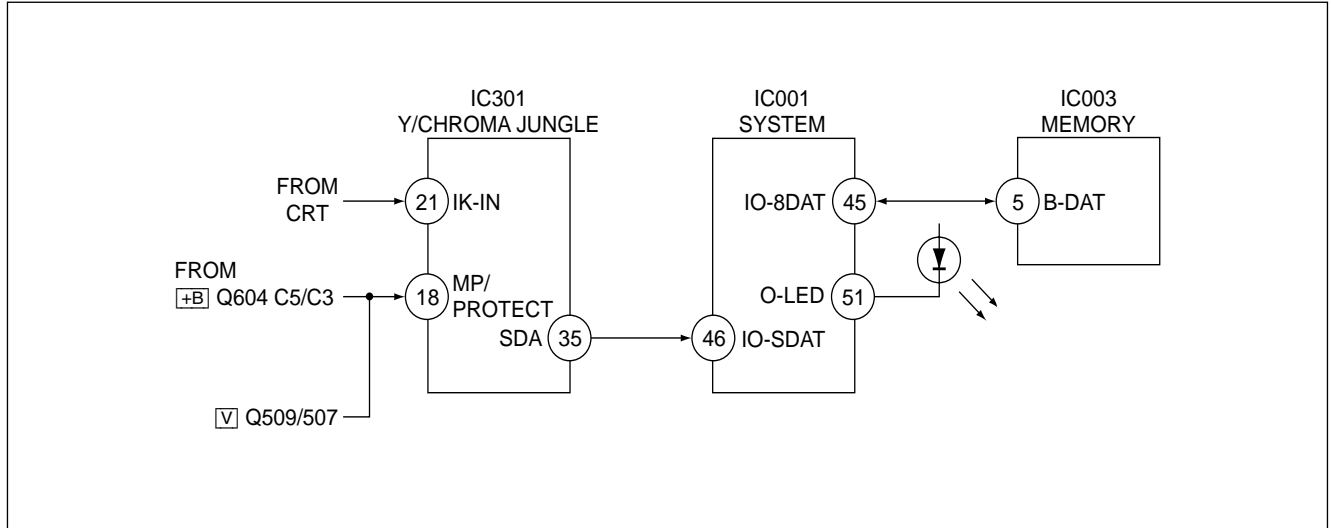
To clear the result display to “0”, press buttons on the remote commander sequentially as shown below when the diagnostic screen is being displayed.

Channel [8] ➡ 0

[Quitting Self-diagnostic screen]

To quit the entire self-diagnostic screen, turn off the power switch on the remote commander or the main unit.

6. SELF-DIAGNOSTIC CIRCUIT



+B overcurrent (OCP)

Occurs when an overcurrent on the +B(135) line is detected by Q604. If Q604 go to ON and the voltage to pin 18 of IC301 should go down when V.SYNC is more than seven verticals in a period, the unit will automatically turn off.

Vertical deflection stopped

Occurs when an absence of the vertical deflection pulse is detected by Q509 and IC001 shut down the power supply.

Vertical deflection overcurrent

Occurs when an overcurrent on V drive line is detected by Q507. Power supply will be shut down when detect this by IC001.

White balance failure

If the RGB levels* do not balance or become low level within 5 seconds, this error will be detected by IC301. TV will stay on, but there will be no picture.



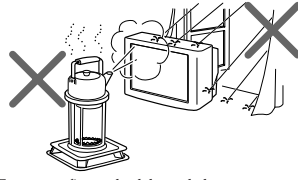
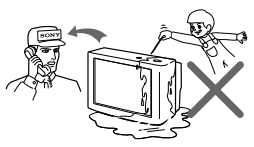
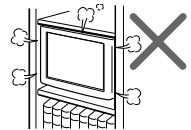
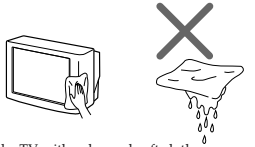
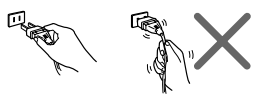

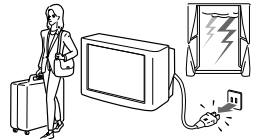
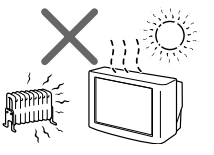
* (Refers to the RGB levels of the AKB detection Ref pulse that detects IK.)

The operating instructions mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remain as in the manual.

SECTION 1 GENERAL (KV-PF21M70)

WARNING

- Dangerously high voltages are present inside the TV.
- TV operating voltage: 110 – 240 V AC. (For Hong Kong only: 220 – 240 V AC.)

| | |
|---|---|
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

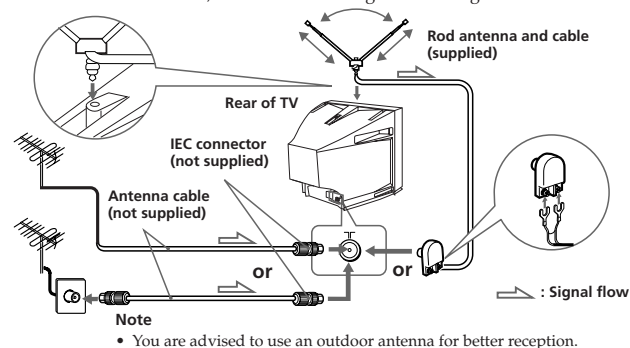
Using Your New TV

Getting Started

Step 1

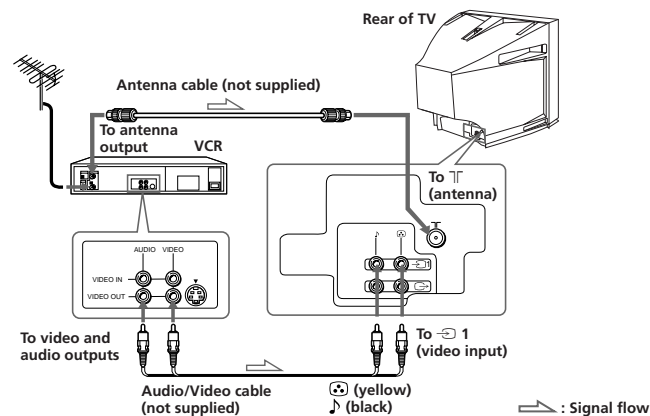
Connect the antenna

If you wish to connect a VCR, see the “Connecting a VCR” diagram below.



Connecting a VCR

To watch the video, press   (see page 12).



Notes

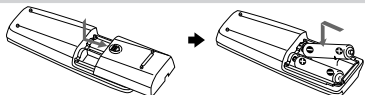
- If you connect a stereo VCR, connect the yellow plug to (the yellow jack) and the white plug to (the black jack).
- If you connect a VCR to the "I" (antenna) terminal, preset the signal output from the VCR to the program number 0 on the TV.
- When no signal is input to the connected video equipment, the TV screen becomes blue.

CAUTION

Do not connect the power cord until you have completed making all other connections; otherwise a minimum leakage current might flow through the antenna and other terminals to ground.

Step 2

Insert the batteries into the remote

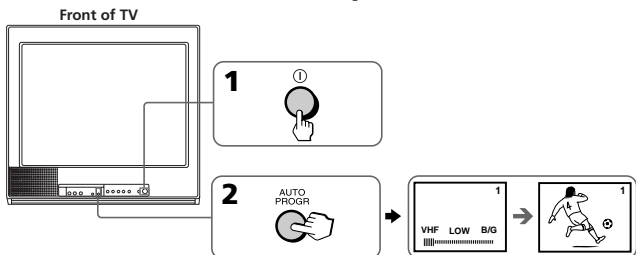


Note

- Do not use old batteries nor use different types of batteries together.

Step 3

Preset the channels automatically



Tips

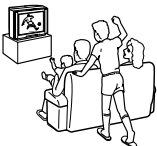
- If you want to stop automatic channel presetting, press SELECT twice.
- If your TV has preset an unwanted channel or cannot preset a particular channel, then preset your TV manually (see page 9).

Note

- During automatic channel presetting, your TV screen will indicate "B/G", "I", "D/K" or "M" for the TV system.

Now You Are Ready. . .

To watch your TV, see page 11.



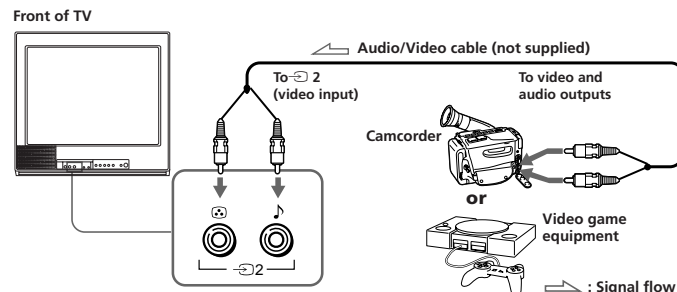
Using Your New TV

Connecting optional components

You can connect optional video components, such as a VCR, multi disc player, camcorder or video game.

To watch the picture of the connected equipment, press (see page 12).

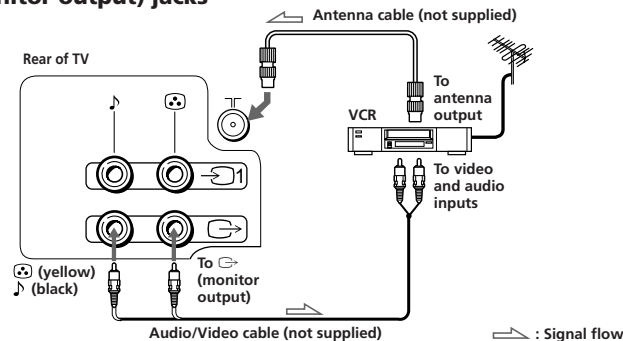
Connecting a camcorder/video game equipment using the (video input) jacks



Note

- You can also connect video equipment to the (video input) jacks at the rear of your TV.

Connecting video equipment using the (monitor output) jacks



Note

- When connecting a stereo VCR, connect the yellow plug to (the yellow jack) and the white plug to (the black jack).

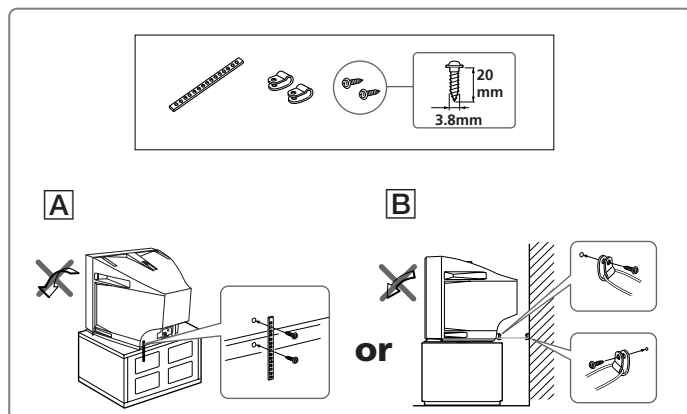
Securing the TV

To prevent the TV from falling, secure the TV using one of the following methods:

A With the supplied screws, attach the band to the TV stand and to the rear of the TV using the provided hole.

or

B Put the cord or chain through the clamps to secure the TV against a wall or pillar.



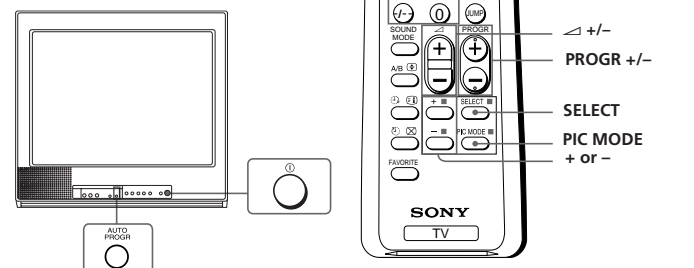
Note

- Use only the supplied screws. Use of other screws may damage the TV.

Using Your New TV

Presetting channels

You can preset up to 100 TV channels in numerical sequence from program number 1 using the remote and the buttons on your TV as well.



Presetting channels automatically

1 Press ① to turn on the TV.



2 Press AUTO PROGRAM.



Note

- During automatic channel presetting, your TV screen will indicate "B/G", "I", "D/K" or "M" for the TV system.

To preset channels automatically from a specified program number

- Press SELECT until "AUTO PROGRAM" appears.
- Press + or -.
The on-screen display will start flashing.
- Press PROG +/- or the number buttons until the desired program number appears.
- Press + or -.

8 Using Your New TV

Using Your New TV | 7

Presetting channels manually

- 1 Press SELECT until "MANUAL PROGRAM" appears.
- 2 Press + or –.
- 3 Press PROGR +/- or the number buttons until the desired program number appears.
- 4 Press + or – until the desired channel picture appears.
- 5 Press SELECT.

To change the color system setting

If the color is abnormal when receiving programs through the ㄥ (antenna) terminal or the ㉔ (video input) jack

- (1) Press SELECT until "COL SYS" appears.

COL SYS: AUTO

- (2) Press + or – to select the appropriate color system until the color is optimal.

AUTO → PAL → SECAM
NTSC 4.43 ← NTSC 3.58 ←

Tip

- Normally set "COL SYS" to "AUTO".

Note

- The color system "SECAM" is not available. The color system "NTSC3.58" is available.

continued

Using Your New TV | 9

Presetting channels (continued)

To change the TV system setting

If the picture or sound is abnormal when receiving programs through the ㄥ (antenna) terminal

- (1) Press SELECT until "TV SYS" appears.

TV SYS: B/G

- (2) Press + or – to select the appropriate TV system until the picture or sound quality is optimal.

B/G → I → D/K → M

Skipping program numbers

- 1 Press PROGR +/- or the number buttons until the unused or unwanted program number appears.
- 2 Press SELECT until "MANUAL PROGRAM" appears.
- 3 Press + or –.
- 4 Press PIC MODE.
- 5 Press SELECT.

To preset the skipped program number again

Preset the channel automatically or manually.

Tip

- You can also use SELECT and ㄥ +/- on the TV to preset channels and skip program numbers.

To use the fine tuning (FINE) function

The fine tuning (FINE) function may help to reduce the following problems: double images and lines moving across the TV screen.

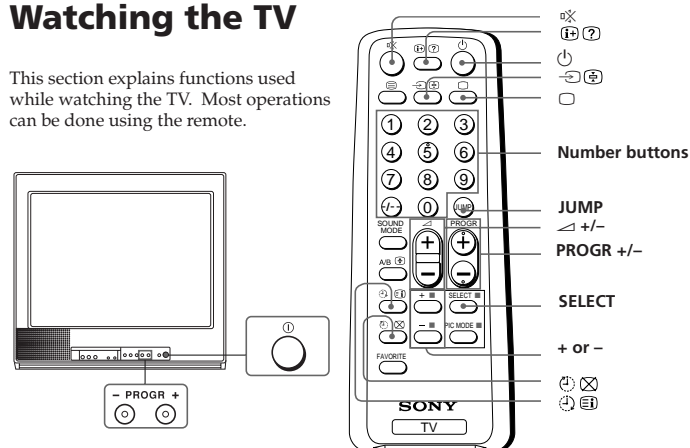
You can use the fine tuning function as below:

- (1) Select the program number you want to adjust.
- (2) Press SELECT until "MANUAL PROGRAM" appears on the screen.
- (3) Press + or – on the remote control once.
- (4) Press ㊸ ㊹ to display "FINE" on the screen.
- (5) Press + or – continuously until the above problems are minimized. The + or – icon on the screen flashes while tuning.
- (6) Press SELECT to return to normal screen.

10 | Using Your New TV

Watching the TV

This section explains functions used while watching the TV. Most operations can be done using the remote.



Using Your New TV

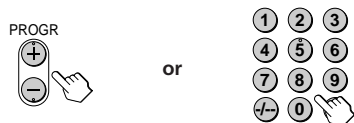
1 Press ① to turn on the TV.

When the TV is in the standby mode (the ① indicator on the TV is lit red), press ① on the remote or PROGR +/- on the TV.



2 Press PROGR +/- or the number buttons to select the TV program.

For double digit numbers, press +/-, then the number (e.g., for 25, press +/-, then 2 and 5).



3 Press ④ +/- to adjust the volume.



Watching the TV (continued)

Additional tasks

| To | Do this |
|--|---|
| Turn off temporarily | Press ①. The ① indicator on the TV lights up red. |
| Turn off completely | Press ① on the TV. |
| Mute the sound | Press M. |
| Watch the video input (VCR, camcorder, etc.) | Press ⑤ to select "VIDEO 1" or "VIDEO 2". To return to the TV program, press ①. |
| Jump back to the previous channel | Press JUMP. |
| Display the on-screen information* | Press ⑥ ⑦. |
| Adjust the volume of each TV program automatically | Press SELECT repeatedly until "INTELLIGENT VOL" appears, then press + or - to select "ON". To cancel, select "OFF". |

* The picture, sound, and either the program number or video mode are displayed. The on-screen display for the picture and sound information disappears after about 3 seconds.

Changing the on-screen display language

1 Press SELECT until "LANGUAGE / 语言:" appears on the screen.



2 Press + or - to select "中文".



Tip

- You can also use SELECT and ④ +/- on the TV to select the on-screen display language.

continued

Setting the Wake Up timer

- Press until the desired period of time appears.
- Select the TV program or video mode you want to display when you wake up.
- Press or set the Sleep timer if you want the TV to turn off automatically.

The indicator on the TV lights up orange.

To cancel the Wake Up timer

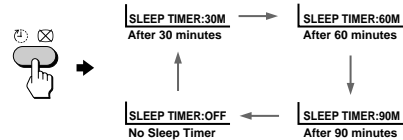
Press until "WAKE UP TIMER: OFF" appears or turn off the TV's main power.

Notes

- The Wake Up timer starts immediately after the on-screen display disappears.
- If no buttons or controls are pressed for more than two hours after the TV is turned on using the Wake Up timer, the TV automatically goes into the standby mode. To continue watching the TV, press any button or control on the TV or the remote.

Setting the Sleep timer

Press until the desired period of time appears.



To cancel the Sleep timer

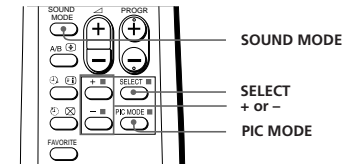
Press until "SLEEP TIMER: OFF" appears or turn the TV off.

Advanced Operations

Customizing the picture and sound

You can customize the picture and sound by selecting the picture and sound modes or by adjusting its settings.

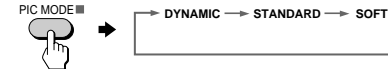
You can change the sound effect by selecting the surround mode.



Selecting the picture and sound modes

To select the picture mode

Press PIC MODE repeatedly until you get the desired picture mode.



| Select | To |
|----------|-----------------------------------|
| DYNAMIC | receive high contrast pictures. |
| STANDARD | receive normal contrast pictures. |
| SOFT | receive mild pictures. |

To select the sound mode

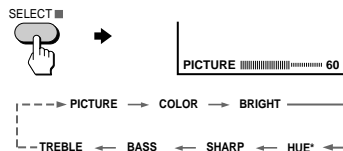
Press SOUND MODE repeatedly until you get the desired sound mode.



| Select | To |
|---------|---|
| DYNAMIC | listen to dynamic and clear sound that emphasizes the low and high sound. |
| DRAMA | listen to sound that emphasizes vocals and background music. |
| SOFT | receive soft sound. |

Adjusting the picture and sound settings

- 1 Press SELECT until the desired setting appears.



Each time you press SELECT, the setting item will change as follows:

- 2 Press + or – to adjust the item.



- 3 To adjust other items, repeat steps 1 to 2.

* "HUE" can be adjusted for the NTSC system only.

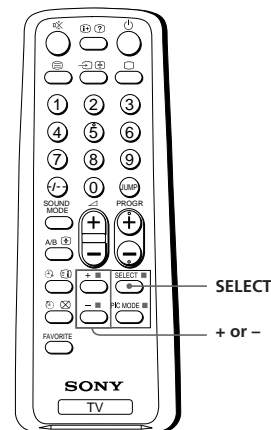
Notes

- When you select a picture or sound mode, the adjusted settings will be reset according to the selected mode.
- You can also use SELECT and \triangle +/- on the TV to adjust the picture and sound settings.

Advanced Operations

Blocking the channels (CHILD LOCK)

You can prevent a child from watching certain programs by using the buttons on the remote control.



- 1 Select the TV program you want to lock.

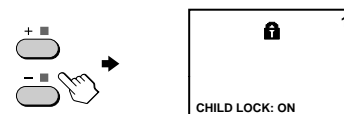
- 2 Press SELECT until "CHILD LOCK" appears on the screen.



- 3 Press + or – to select "ON".

The symbol appears on the screen.

To unlock the channel, press + or – to select "OFF". The symbol disappears from the screen.





Note

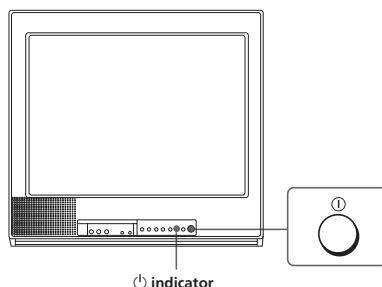
- If you preset a locked channel, that particular channel will be unlocked automatically.





Additional Information

Self-diagnosis function

Your TV is equipped with a self-diagnosis function. If there is a problem with your TV, the  indicator flashes red. The number of times the  indicator flashes indicates the possible causes.

Front of TV



















- 1 Check that the  indicator flashes red a number of times between 3-second intervals.
- 2 Count the number of times the  indicator flashes.
- 3 Press  (main power) to turn off your TV.
- 4 Inform your nearest Sony service center about the number of times the  indicator flashes. Be sure to note the model name and serial number located on the rear of your TV.

Additional Information

Troubleshooting

If you find any problem while viewing your TV, please check the following guide. If any problem persists, contact your Sony dealer.

| Symptom | Solutions | Possible cause |
|---|--|--|
| Snowy picture  | <ul style="list-style-type: none"> Check the antenna cable and connection on the TV, VCR and on the wall. (page 4) Press SELECT until "MANUAL PROGRAM" appears on the screen then preset the channel again. (page 9) | <ul style="list-style-type: none"> Connection is loose or the cable is damaged. Channel presetting is inappropriate or incomplete. |
| Noisy sound  | <ul style="list-style-type: none"> Check the antenna type (VHF/UHF). Contact a Sony dealer for advice. Adjust the antenna direction. Contact a Sony dealer for advice. Try using a booster. | <ul style="list-style-type: none"> The antenna type is inappropriate. The antenna direction is inappropriate. Signal transmission is low. |
| Distorted picture  | <ul style="list-style-type: none"> Turn off or disconnect the booster if it is in use. | <ul style="list-style-type: none"> Broadcast signals are too strong. |
| Noisy sound  | <ul style="list-style-type: none"> If the sound of all the channels are noisy, check the TV system (TV SYS) setting (page 10), then press AUTO PROGR to preset the channels again (page 8). If the sound of some channels are noisy, select the channel, then select the appropriate TV system (TV SYS). (page 10) | <ul style="list-style-type: none"> The TV system setting or channel presetting is inappropriate or incomplete. |
| Good picture  | | |
| Noisy sound  | | |
| No picture  | <ul style="list-style-type: none"> Check the power cord, antenna and the VCR connections. Press  (power). Press  (main power) on the TV to turn off the TV for about five seconds, then turn it on again. | <ul style="list-style-type: none"> The power cord, antenna or VCR is not connected. The TV is not turned on. |
| No sound  | | |

| Symptom | Solutions | Possible cause |
|---|--|--|
| Good picture  | <ul style="list-style-type: none"> Press \triangleleft + to increase the volume level. Press \otimes to cancel the muting. | <ul style="list-style-type: none"> The volume level is too low. The sound is muted. |
| No sound  | | |
| Dotted lines or stripes  | <ul style="list-style-type: none"> Do not use a hair dryer or other equipment near the TV. Adjust the antenna direction for minimum interference. Contact a Sony dealer for advice. | <ul style="list-style-type: none"> There is local interference from cars, neon signs, hair dryers, power generators, etc. |
| Double images or "ghosts"  | <ul style="list-style-type: none"> Use a highly directional antenna. Use the fine tuning (FINE) function. (page 10) Adjust the antenna direction. Contact a Sony dealer for advice. Turn off or disconnect the booster if it is in use. | <ul style="list-style-type: none"> Broadcast signals are reflected by nearby mountains or buildings. The antenna direction is inappropriate. Use of a booster is inappropriate. |
| No color  | <ul style="list-style-type: none"> Press SELECT until "COLOR" appears on the screen, then press + or - to adjust the color level. (page 15) Press SELECT until "COL SYS" appears on the screen, then check the color system setting (usually set this to "AUTO"). (page 9). Adjust the antenna direction. Contact a Sony dealer for advice. | <ul style="list-style-type: none"> The color level setting is too low. The color system setting is inappropriate. The antenna direction is inappropriate. |
| Abnormal color patches  | <ul style="list-style-type: none"> Keep external speakers or other electrical equipment away from the TV. Do not move the TV while the TV is turned on. Press O (main power) on the TV to turn off the TV for about five minutes, then turn it on again. | <ul style="list-style-type: none"> The magnetic disturbance from external speakers or other equipment, or the direction of the earth's magnetic field may affect the TV. |

Troubleshooting (continued)

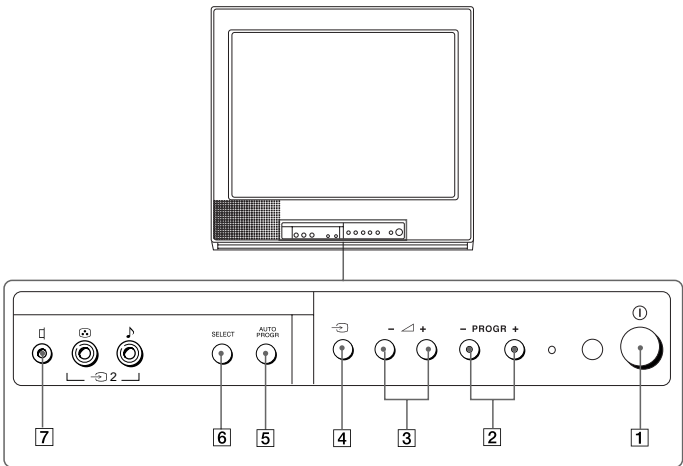
| Symptom | Solutions | Possible cause |
|---|---|---|
| Lines moving across the TV screen. | <ul style="list-style-type: none"> Use the fine tuning (FINE) function. (page 10) | <ul style="list-style-type: none"> There is interference from external sources, e.g., heavy machineries, nearby broadcast station. |
| The O indicator on your TV flashes red a number of times between 3-second intervals. | <ul style="list-style-type: none"> Contact your nearest Sony service center. (page 17) | <ul style="list-style-type: none"> Your TV may need service. |
| TV cabinet creaks. | — | <ul style="list-style-type: none"> Changes in room temperature sometimes make the TV cabinet expand or contract, making a noise. This does not indicate a malfunction. |
| A "boom" sound is heard when the TV is turned on. | — | <ul style="list-style-type: none"> The TV's demagnetizing function is working. This does not indicate a malfunction. |

continued

Identifying parts and controls

Refer to the pages indicated in parentheses () for details.

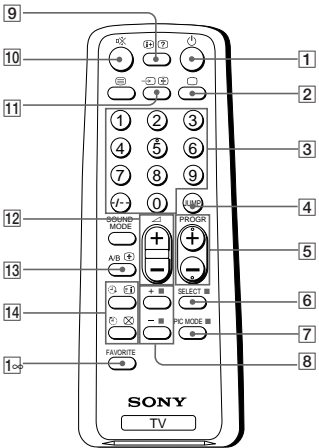
Front panel



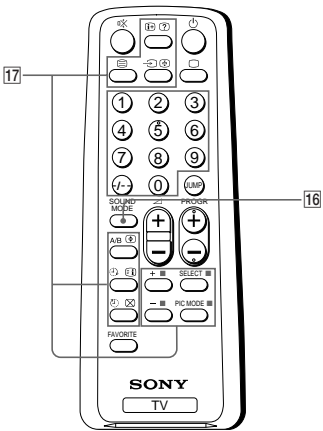
- 1 ① (main power) button (5)
- 2 PROGR +/- (program) buttons (11)
- 3 +/- (volume) buttons (11)
- 4 TV/video button (12)
- 5 AUTO PROGR (program) button (5)
- 6 SELECT button (9)
- 7 ④ (earphone) jack

Identifying parts and controls (continued)

Remote Control



- 1 ① (power) button (11)
- 2 ② (TV) button (12)
- 3 Number buttons (11)
- 4 JUMP button (12)
- 5 PROGR +/- buttons (11)
- 6 SELECT button (9)
- 7 PIC MODE button (14)
- 8 + or - buttons (9)
- 9 ③ (display) button (12)
- 10 ④ (muting) button (12)
- 11 ⑤ (video) button (12)
- 12 +/- (volume) buttons (11)
- 13 A/B button (not used for this model)
- 14 Timer setting buttons (13)
 - ⑥ (wake up timer)
 - ⑦ (sleep timer)
- 15 FAVORITE button (not used for this model)



- 16 SOUND MODE button (14)
- 17 Teletext operation buttons (not used for this model)
 - ⑧ (text) ⑨ (enlarge)
 - ⑩ (reveal) ⑪ (hold)
 - ⑫ (index) ⑬ (text clear)
 - (FASTEXT: red, green, yellow, blue)

Names/symbols of buttons on the remote are indicated in different colors to represent the available functions.

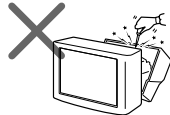

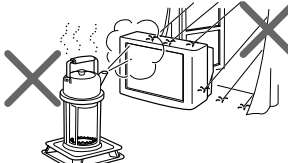
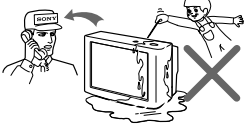
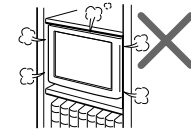
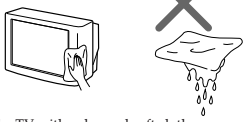


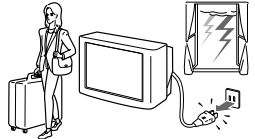
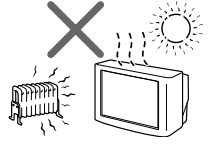
| Label color | Button function |
|-------------|---------------------------|
| White | For general TV operations |
| Green | For Teletext operations |

The operating instructions mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remain as in the manual.

SECTION 1-2 GENERAL (KV-TF21M61/TF21M90)

WARNING

- Dangerously high voltages are present inside the TV.
- Operate the TV only between 110 – 240 V AC.

| | |
|--|---|
|  <p>Do not open the cabinet and the rear cover of the TV. Refer servicing to qualified personnel.</p> |  <p>Install the TV in a stable position. Do not allow children to climb onto it.</p> |
|  <p>To prevent fire or shock hazard, do not expose the TV to rain or moisture.</p> |  <p>Do not operate the TV if any liquid or solid object falls into it. Have it checked immediately by qualified personnel only.</p> |
|  <p>Do not install the TV in a confined space, such as a bookcase or built-in cabinet. Do not block the ventilation openings of the TV.</p> |  <p>Clean the TV with a dry and soft cloth. Do not use benzine, thinner, or any other chemicals to clean the TV. Do not scratch the picture tube.</p> |
|  <p>Do not pull the power cord to disconnect the TV. Pull it out by the plug.</p> |  <p>Do not plug in too many appliances to the same power socket. Do not damage the power cord.</p> |
|  <p>Disconnect the power cord during lightning storms or if you are not going to use the TV for several days.</p> |  <p>Do not install the TV in hot, humid or excessively dusty places.</p> |

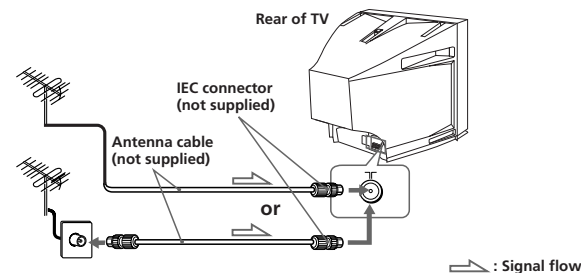
Using Your New TV

Getting Started

Step 1

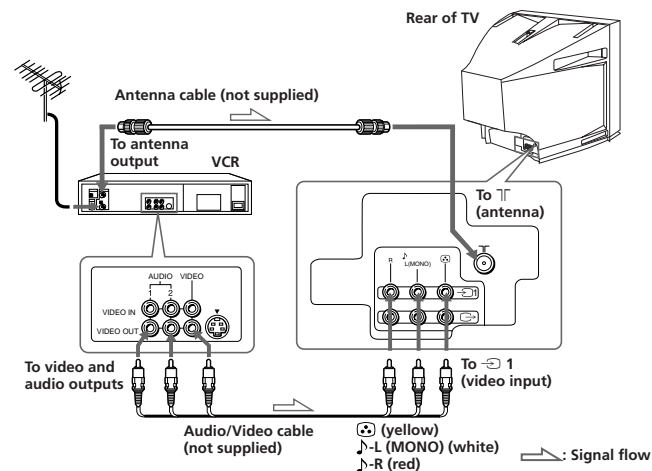
Connect the antenna

If you wish to connect a VCR, see the "Connecting a VCR" diagram below.



Connecting a VCR

To watch the video, press  (see page 12).



Notes

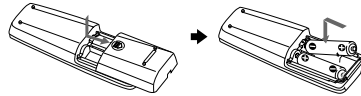
- If you connect a monaural VCR, connect the yellow plug to (yellow jack) and the black plug to L (MONO) (the white jack).
- If you connect a VCR to the antenna terminal, preset the signal output from the VCR to the program number 0 on the TV.
- When no signal is input to the connected video equipment, the TV screen becomes blue.

CAUTION

Do not connect the power cord until you have completed making all other connections; otherwise a minimum leakage current might flow through the antenna and other terminals to ground.

Step 2

Insert the batteries into the remote

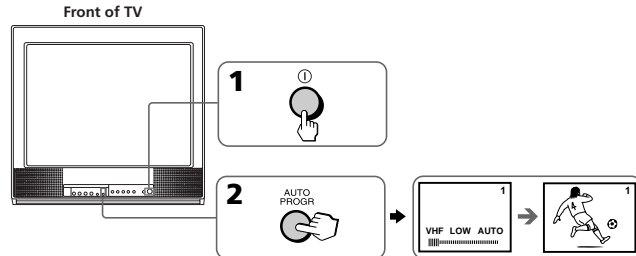


Note

- Do not use old batteries nor use different types of batteries together.

Step 3

Preset the channels automatically

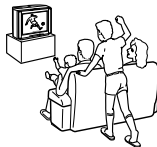


Tips

- If you want to stop automatic channel presetting, press SELECT twice.
- If your TV has preset an unwanted channel or cannot preset a particular channel, then preset your TV manually (see page 9).

Now You Are Ready...

To watch your TV, see page 11.



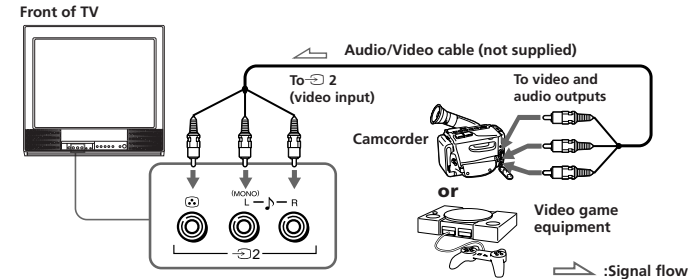
Using Your New TV

Connecting optional components

You can connect optional audio/video components, such as a VCR, multi disc player, camcorder, video game or stereo system.

To watch the picture of the connected equipment, press (see page 12).

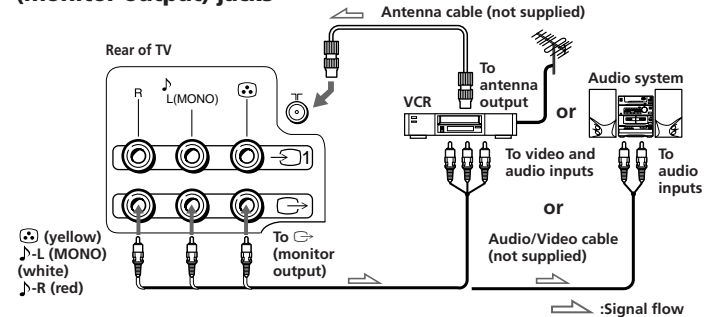
Connecting a camcorder/video game equipment using the (video input) jacks



Note

- You can also connect video equipment to the 1 (video input) jacks at the rear of your TV.

Connecting audio/video equipment using the (monitor output) jacks



Note

- When connecting a monaural VCR, connect the yellow plug to (the yellow jack) and the black plug to L (MONO) (the white jack).

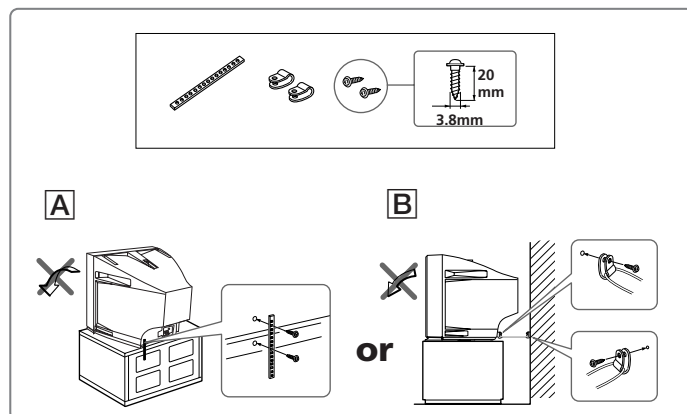
Securing the TV

To prevent the TV from falling, secure the TV using one of the following methods:

- A** With the supplied screws, attach the band to the TV stand and to the rear of the TV using the provided hole.

or

- B** Put the cord or chain through the clamps to secure the TV against a wall or pillar.



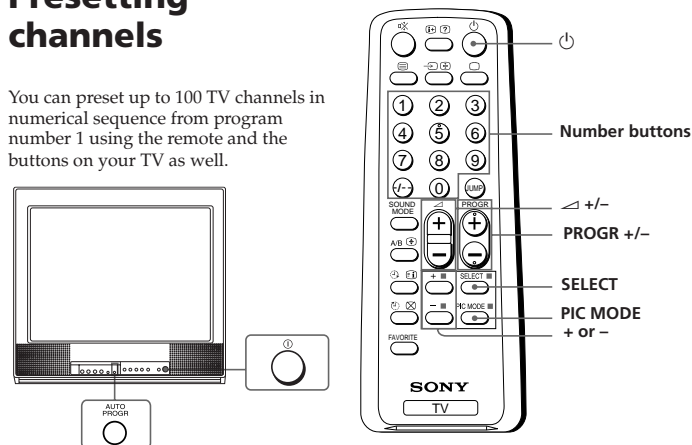
Note

- Use only the supplied screws. Use of other screws may damage the TV.

Using Your New TV

Presetting channels

You can preset up to 100 TV channels in numerical sequence from program number 1 using the remote and the buttons on your TV as well.



Presetting channels automatically

- 1** Press **⏻** to turn on the TV.



- 2** Press **AUTO PROGR.**



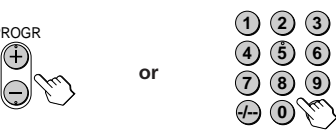
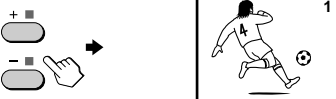



VHF LOW AUTO

To preset channels automatically from a specified program number

- Press **SELECT** until "AUTO PROGRAM" appears.
- Press **+ or -**.
The on-screen display will start flashing.
- Press **PROGR +/-** or the number buttons until the desired program number appears.
- Press **+ or -**.

Presetting channels manually

- 1 Press SELECT until "MANUAL PROGRAM" appears.
 
- 2 Press + or -.
 
- 3 Press PROGR +/- or the number buttons until the desired program number appears.
 
- 4 Press + or - until the desired channel picture appears.
 
- 5 Press SELECT.
 

To change the TV system setting

If the picture or sound is abnormal when receiving programs through the ㄥ (antenna) terminal

- (1) Press SELECT until "TV SYS" appears.

TV SYS: B/G

- (2) Press + or - to select the appropriate TV system until the picture or sound quality is optimal.

B/G → I → D/K → M

continued

Presetting channels (continued)

To change the color system setting

If the color is abnormal when receiving programs through the ㄥ (antenna) terminal or the ㉔ (video input) jack

- (1) Press SELECT until "COL SYS" appears.

COL SYS: AUTO

- (2) Press + or - to select the appropriate color system until the color is optimal.

AUTO → PAL → SECAM → NTSC 3.58 → NTSC 4.43

Tip

- Normally set "COL SYS" to "AUTO".

Skipping program numbers

- 1 Press PROGR +/- or the number buttons until the unused or unwanted program number appears.
- 2 Press SELECT until "MANUAL PROGRAM" appears.
- 3 Press + or -.
- 4 Press PIC MODE.
- 5 Press SELECT.

To preset the skipped program number again

Preset the channel automatically or manually.

Tip

- You can also use SELECT and ㄥ +/- on the TV to preset channels and skip program numbers.

To use the fine tuning (FINE) function

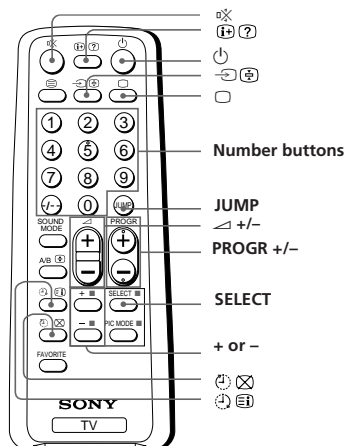
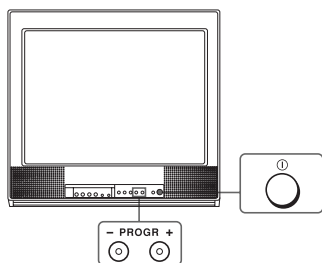
The fine tuning (FINE) function may help to reduce the following problems: incomplete Teletext display, double images and lines moving across the TV screen.

You can use the fine tuning function as below:

- (1) Select the program number you want to adjust.
- (2) Press SELECT until "MANUAL PROGRAM" appears on the screen.
- (3) Press + or - on the remote control once.
- (4) Press ㉔ ㉔ to display "FINE" on the screen.
- (5) Press + or - continuously until the above problems are minimized.
The + or - icon on the screen flashes while tuning.
- (6) Press SELECT to return to normal screen.

Watching the TV

This section explains functions used while watching the TV. Most operations can be done using the remote.



Using Your New TV

1 Press ① to turn on the TV.

When the TV is in the standby mode (the ① indicator on the TV is lit red), press ① on the remote or PROGR +/- on the TV.

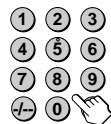


2 Press PROGR +/- or the number buttons to select the TV program.

For double digit numbers, press +/-, then the number (e.g., for 25, press +/-, then 2 and 5).



or



3 Press +/- to adjust the volume.



Watching the TV (continued)

Additional tasks

| To | Do this |
|---|--|
| Turn off temporarily | Press ①. The ① indicator on the TV lights up red. |
| Turn off completely | Press ① on the TV. |
| Mute the sound | Press MUTE. |
| Watch the video input (VCR, camcorder, etc.) | Press ② ③ to select "VIDEO 1" or "VIDEO 2". To return to the TV program, press ④. |
| Jump back to the previous channel | Press JUMP. |
| Display the on-screen information* | Press ⑤ ⑥. |
| Adjust the volume of each TV program automatically | Press SELECT repeatedly until "INTELLIGENT VOL" appears, then press + or - to select "ON". To cancel, select "OFF". |
| Adjust the picture position when it is not aligned to the TV screen | Press SELECT repeatedly until "PIC ROTATION" appears, then press + or - to adjust the alignment of the picture position. |

PIC ROTATION ⑦ ⑧ ⑨ ⑩

The ⑦ ⑧ or ⑨ ⑩ icon on the screen flashes while adjusting.

* The picture, sound, and either the program number or video mode are displayed. The on-screen display for the picture and sound information disappears after about 3 seconds.

Changing the on-screen display language

1 Press SELECT until "LANGUAGE / 语言:" appears on the screen.



LANGUAGE / 语言 : ENGLISH

2 Press + or - to select "中文".




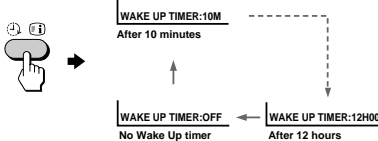

语言 / LANGUAGE : 中文

Tip

- You can also use SELECT and +/- on the TV to select the on-screen display language.

continued

Setting the Wake Up timer

- Press  until the desired period of time appears.

- Select the TV program or video mode you want to display when you wake up.
- Press  or set the Sleep timer if you want the TV to turn off automatically.

The  indicator on the TV lights up orange.


To cancel the Wake Up timer

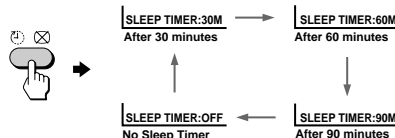
Press  until "WAKE UP TIMER: OFF" appears or turn off the TV's main power.

Notes


- The Wake Up timer starts immediately after the on-screen display disappears.
- If no buttons or controls are pressed for more than two hours after the TV is turned on using the Wake Up timer, the TV automatically goes into the standby mode. To continue watching the TV, press any button or control on the TV or the remote.

Setting the Sleep timer

Press  until the desired period of time appears.



To cancel the Sleep timer

Press  until "SLEEP TIMER: OFF" appears or turn the TV off.

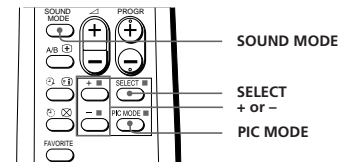
Using Your New TV

Advanced Operations

Customizing the picture and sound

You can customize the picture and sound by selecting the picture and sound modes or by adjusting its settings.

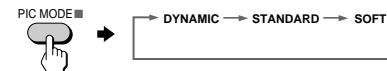
You can change the sound effect by selecting the surround mode.



Selecting the picture and sound modes

To select the picture mode

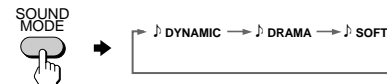
Press PIC MODE repeatedly until you get the desired picture mode.



| Select | To |
|----------|-----------------------------------|
| DYNAMIC | receive high contrast pictures. |
| STANDARD | receive normal contrast pictures. |
| SOFT | receive mild pictures. |

To select the sound mode

Press SOUND MODE repeatedly until you get the desired sound mode.



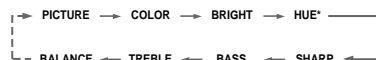
| Select | To |
|---------|---|
| DYNAMIC | listen to dynamic and clear sound that emphasizes the low and high sound. |
| DRAMA | listen to sound that emphasizes vocals and background music. |
| SOFT | receive soft sound. |

Adjusting the picture and sound settings

- 1 Press SELECT until the desired setting appears.



Each time you press SELECT, the setting item will change as follows:



- 2 Press + or – to adjust the item.



- 3 To adjust other items, repeat steps 1 to 2.

* "HUE" can be adjusted for the NTSC system only.

Notes

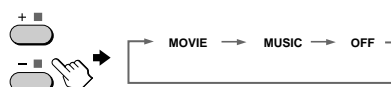
- When you select a picture or sound mode, the adjusted settings will be reset according to the selected mode.
- You can also use SELECT and \triangle +/- on the TV to adjust the picture and sound settings.

Selecting the surround mode

- 1 Press SELECT repeatedly until "SURROUND" appears.



- 2 Press + or – to select the desired surround sound.

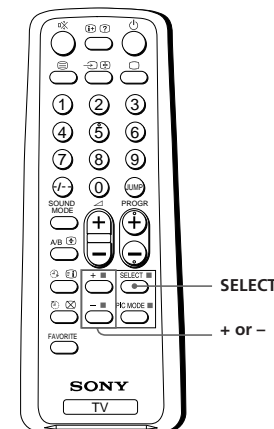


| Select | To |
|--------|---|
| MOVIE | listen to sound that spreads out over a large area, giving the feeling of being at a movie theatre. |
| MUSIC | listen to the sound that gives the feeling of being at a live concert. |
| OFF | turn off the surround sound. |

Advanced Operations

Blocking the channels (CHILD LOCK)

You can prevent a child from watching certain programs by using the buttons on the remote control.



- 1 Select the TV program you want to lock.

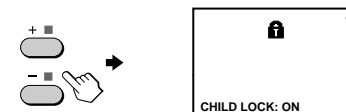
- 2 Press SELECT until "CHILD LOCK" appears on the screen.



- 3 Press + or – to select "ON".

The symbol appears on the screen.

To unlock the channel, press + or – to select "OFF". The symbol disappears from the screen.

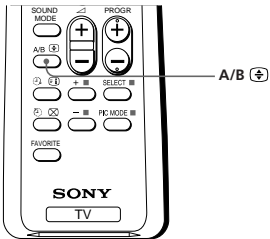


Note

- If you preset a locked channel, that particular channel will be unlocked automatically.

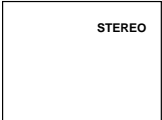
Selecting a stereo or bilingual program

You can enjoy stereo sound or bilingual programs of NICAM and A2 (German) stereo systems.



Press A/B repeatedly until you receive the sound you want.

The on-screen display changes to show the selected sound and the indicator on the TV lights up red.



When receiving a NICAM program

| Broadcasting | On-screen display (Selected sound) |
|-----------------|--|
| NICAM stereo | <div><div>NICAM (Stereo sound)</div><div>MONO (Regular sound)</div></div> |
| NICAM bilingual | <div><div>NICAM MAIN (Main sound)</div><div>NICAM SUB (Sub sound)</div><div>MONO (Regular sound)</div></div> |
| NICAM monaural | <div><div>NICAM MAIN (Main sound)</div><div>MONO (Regular sound)</div></div> |

continued

Selecting a stereo or bilingual program (continued)

When receiving an A2 (German) program

| Broadcasting | On-screen display (Selected sound) |
|-----------------------|--|
| A2 (German) stereo | <div><div>MONO (Regular sound)</div><div>STEREO (Stereo sound)</div></div> |
| A2 (German) bilingual | <div><div>MAIN (Main sound)</div><div>SUB (Sub sound)</div></div> |

Receiving area for NICAM and A2 (German) programs

| System | Receiving area |
|-------------|---|
| NICAM | Hong Kong, Singapore, New Zealand, Malaysia, Thailand, etc. |
| A2 (German) | Australia, Malaysia, Thailand, etc. |

Notes

- If the signal is very weak, the sound becomes monaural automatically.
- If the stereo sound is noisy when receiving a NICAM program, select "MONO". The sound becomes monaural, but the noise is reduced. (KV-TF21M90 only)

If the sound is distorted or noisy when receiving a monaural program through the (antenna) terminal

Press A/B repeatedly until "MONO" appears on the screen.

To cancel the monaural sound setting, press A/B again until "AUTO" appears on the screen.





Notes

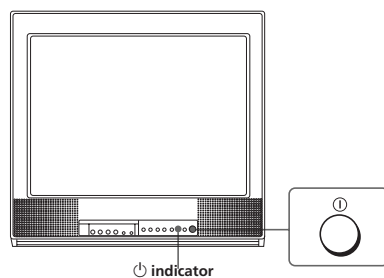
- The "MONO" or "AUTO" setting is memorized for each program position.
- You cannot receive stereo broadcast signal when the TV is in the "MONO" setting. Normally set the TV to "AUTO."





Additional Information

Self-diagnosis function

Your TV is equipped with a self-diagnosis function. If there is a problem with your TV, the  indicator flashes red. The number of times the  indicator flashes indicates the possible causes.

Front of TV

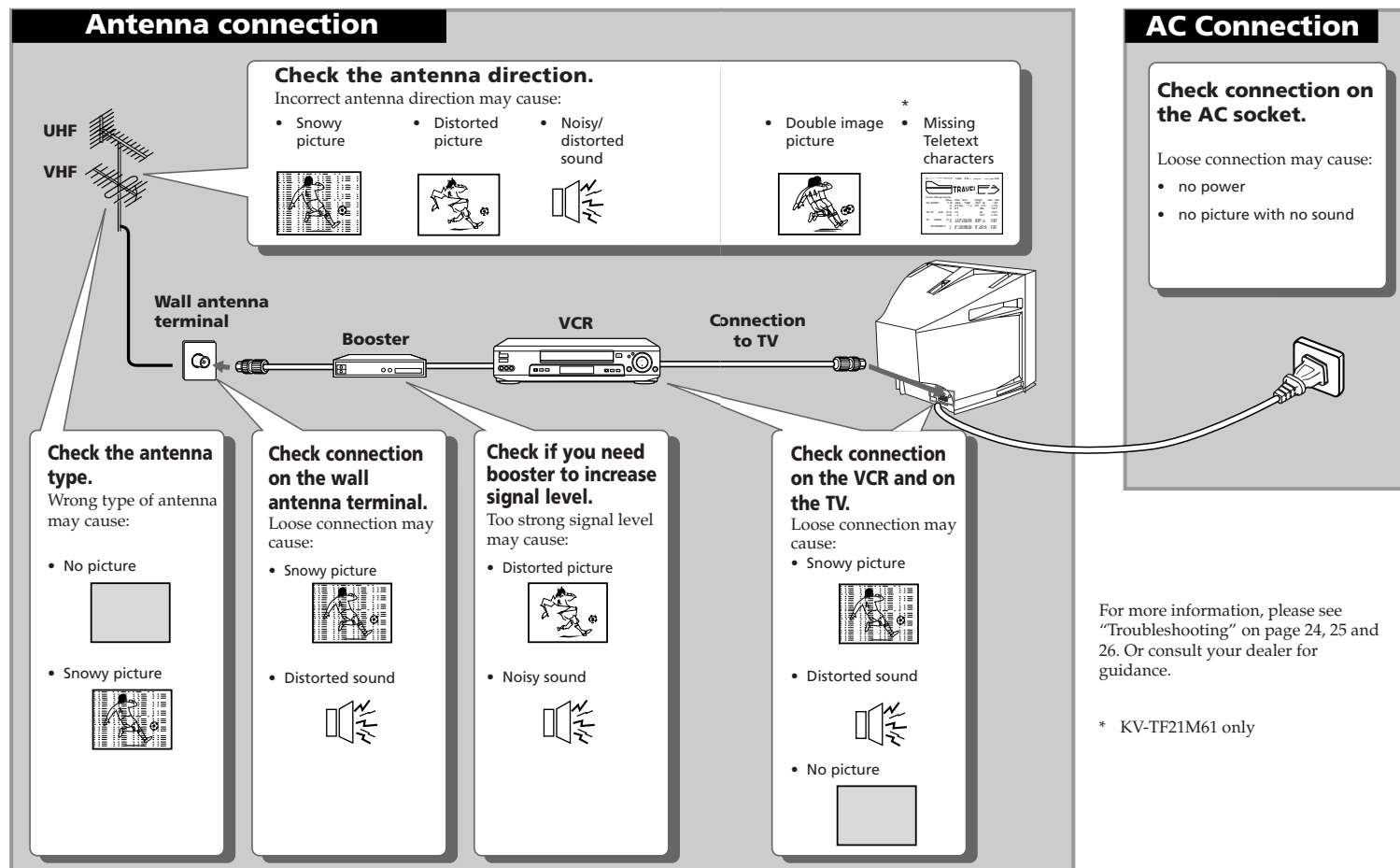


- 1 Check that the  indicator flashes red a number of times between 3-second intervals.
- 2 Count the number of times the  indicator flashes.
- 3 Press  (main power) to turn off your TV.
- 4 Inform your nearest Sony service center about the number of times the  indicator flashes.
Be sure to note the model name and serial number located on the rear of your TV.

Additional Information









Troubleshooting Shortcuts







For better viewing, please check the following connections.



Troubleshooting


If you find any problem while viewing your TV, please check the following guide. If any problem persists, contact your Sony dealer .

| Symptom | Solutions | Possible cause |
|---|--|--|
| Snowy picture  | <ul style="list-style-type: none"> Check the antenna cable and connection on the TV, VCR and on the wall. (page 4) Press SELECT until "MANUAL PROGRAM" appears on the screen then preset the channel again. (page 9) | <ul style="list-style-type: none"> Connection is loose or the cable is damaged. Channel presetting is inappropriate or incomplete. |
| Noisy sound  | <ul style="list-style-type: none"> Check the antenna type (VHF/UHF). Contact a Sony dealer for advice. Adjust the antenna direction. Contact a Sony dealer for advice. Try using a booster. | <ul style="list-style-type: none"> The antenna type is inappropriate. The antenna direction is inappropriate. Signal transmission is low. |
| Distorted picture  | <ul style="list-style-type: none"> Turn off or disconnect the booster if it is in use. | <ul style="list-style-type: none"> Broadcast signals are too strong. |
| Noisy sound  | | |
| Good picture  | <ul style="list-style-type: none"> If the sound of all the channels are noisy, check the TV system (TV SYS) setting (page 9), then press AUTO PROGR to preset the channels again (page 8). If the sound of some channels are noisy, select the channel, then select the appropriate TV system (TV SYS). (page 9) | <ul style="list-style-type: none"> The TV system setting or channel presetting is inappropriate or incomplete. |
| Noisy sound  | | |
| No picture  | <ul style="list-style-type: none"> Check the power cord, antenna and the VCR connections. Press (power). Press (main power) on the TV to turn off the TV for about five seconds, then turn it on again. | <ul style="list-style-type: none"> The power cord, antenna or VCR is not connected. The TV is not turned on. |
| No sound  | | |

| Symptom | Solutions | Possible cause |
|---|--|--|
| Good picture  | <ul style="list-style-type: none"> Press \triangle + to increase the volume level. Press \boxtimes to cancel the muting. Press A/B (4) until a better sound is heard. | <ul style="list-style-type: none"> The volume level is too low. The sound is muted. Broadcast signal has a transmission problem. |
| No sound  | | |
| Dotted lines or stripes  | <ul style="list-style-type: none"> Do not use a hair dryer or other equipment near the TV. Adjust the antenna direction for minimum interference. Contact a Sony dealer for advice. | <ul style="list-style-type: none"> There is local interference from cars, neon signs, hair dryers, power generators, etc. |
| Double images or "ghosts"  | <ul style="list-style-type: none"> Use a highly directional antenna. Use the fine tuning (FINE) function. (page 10) Adjust the antenna direction. Contact a Sony dealer for advice. Turn off or disconnect the booster if it is in use. | <ul style="list-style-type: none"> Broadcast signals are reflected by nearby mountains or buildings. The antenna direction is inappropriate. Use of a booster is inappropriate. |
| No color  | <ul style="list-style-type: none"> Press SELECT until "COLOR" appears on the screen, then press + or - to adjust the color level. (page 15) Press SELECT until "COL SYS " appears on the screen, then check the color system setting (usually set this to "AUTO"). (page 10). Adjust the antenna direction. Contact a Sony dealer for advice. | <ul style="list-style-type: none"> The color level setting is too low. The color system setting is inappropriate. The antenna direction is inappropriate. |
| Abnormal color patches  | <ul style="list-style-type: none"> Keep external speakers or other electrical equipment away from the TV. Do not move the TV while the TV is turned on. Press (main power) on the TV to turn off the TV for about five minutes, then turn it on again. | <ul style="list-style-type: none"> The magnetic disturbance from external speakers or other equipment, or the direction of the earth's magnetic field may affect the TV. |
| TV cannot receive stereo broadcast signal | <ul style="list-style-type: none"> Press A/B (4) until "AUTO" appears on the screen. | <ul style="list-style-type: none"> The stereo reception setting is inappropriate. |

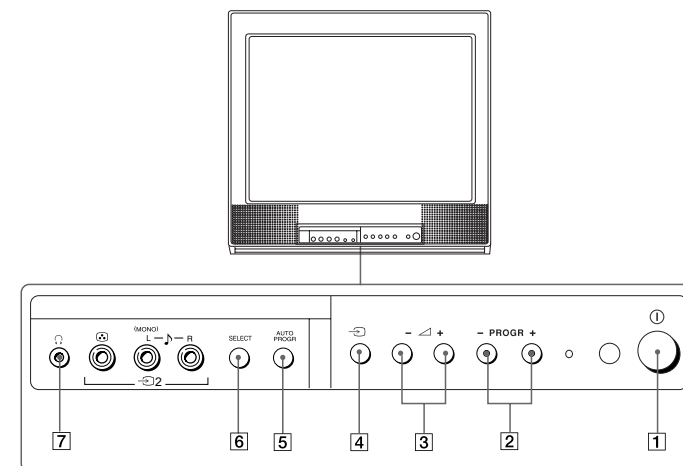
continued

Troubleshooting (continued)

| Symptom | Solutions | Possible cause |
|--|---|---|
| Stereo broadcast sound switches on and off or is distorted. or The sound switches between monaural and stereo frequently. | <ul style="list-style-type: none"> Check the antenna cable and connection on the TV, VCR and on the wall. (page 4) Adjust the antenna direction. Contact a Sony dealer for advice. Press A/B (⏻) until a better sound is heard. | <ul style="list-style-type: none"> Connection is loose or the cable is damaged. The antenna direction is inappropriate. Broadcast signal has a transmission problem. |
| "100" appears on the top of the screen and there is no Teletext display. (KV-TF21M61 only) | — | <ul style="list-style-type: none"> The channel carries no Teletext broadcast. |
| Teletext display is incomplete (snowy picture or double images). (KV-TF21M61 only) | <ul style="list-style-type: none"> Check the antenna cable and connection on the TV, VCR, and at the wall. (page 4) Adjust the antenna direction. Contact a Sony dealer for advice. Try using a booster. Use the fine tuning (FINE) function. (page 10) | <ul style="list-style-type: none"> Connection is loose or the cable is damaged. The antenna direction is inappropriate. Signal transmission is too low. |
| Picture slant  | <ul style="list-style-type: none"> Press SELECT until "PIC ROTATION" appears on the screen, then press + or - to align the picture to the TV screen. (page 12) | <ul style="list-style-type: none"> The terrestrial magnetism affects your TV set. |
| Lines moving across the TV screen. | <ul style="list-style-type: none"> Use the fine tuning (FINE) function. (page 10) | <ul style="list-style-type: none"> There is interference from external sources, e.g., heavy machineries, nearby broadcast station. |
| The ⏻ indicator on your TV flashes red a number of times between 3-second intervals. | <ul style="list-style-type: none"> Contact your nearest Sony service center. (page 21) | <ul style="list-style-type: none"> Your TV may need service. |
| TV cabinet creaks. | — | <ul style="list-style-type: none"> Changes in room temperature sometimes make the TV cabinet expand or contract, making a noise. This does not indicate a malfunction. |
| A "boom" sound is heard when the TV is turned on. | — | <ul style="list-style-type: none"> The TV's demagnetizing function is working. This does not indicate a malfunction. |

Identifying parts and controls

Refer to the pages indicated in parentheses () for details.

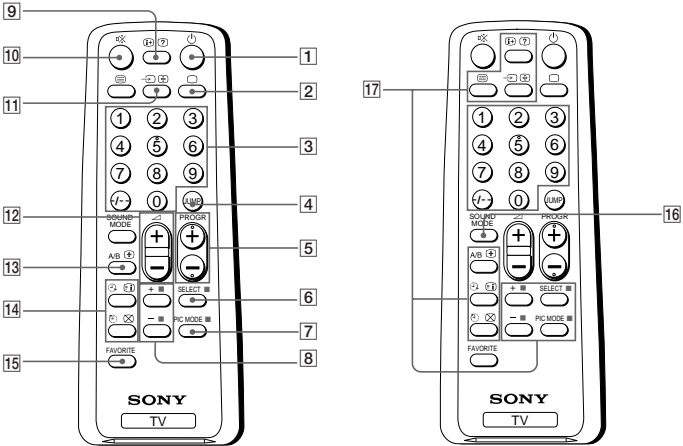
Front panel

- ① (main power) button (5)
- ② PROGR +/- (program) buttons (11)
- ③ +/- (volume) buttons (11)
- ④ TV/video button (12)
- ⑤ AUTO PROGR (program) button (5)
- ⑥ SELECT button (9)
- ⑦ ⏻ (headphone) jack

continued

Identifying parts and controls (continued)

Remote Control



- 1 (power) button (11)
- 2 (TV) button (12)
- 3 Number buttons (11)
- 4 JUMP button (12)
- 5 PROGR +/- buttons (11)
- 6 SELECT button (9)
- 7 PIC MODE button (14)
- 8 + or - buttons (9)
- 9 (display) button (12)
- 10 (muting) button (12)
- 11 (video) button (12)
- 12 +/- (volume) buttons (11)
- 13 A/B button (17)
- 14 Timer setting buttons (13)
 - (wake up timer)
 - (sleep timer)
- 15 FAVORITE button (not used for these models)

- 16 SOUND MODE button (14)
- 17 Teletext operation buttons (19,20) (KV-TF21M61 only)
 - (text) (enlarge)
 - (reveal) (hold)
 - (index) (text clear)
 - (FASTEXT: red, green, yellow, blue)

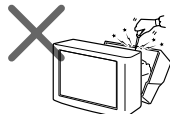

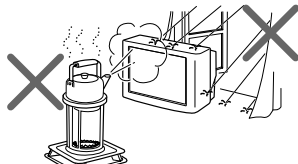
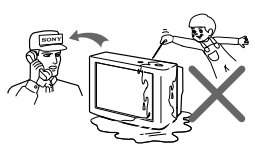
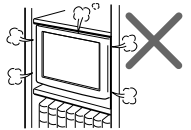
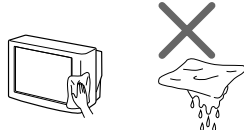


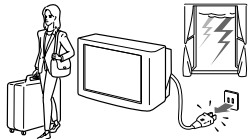
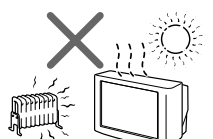
| Names/symbols of buttons on the remote are indicated in different colors to represent the available functions. | |
|--|---------------------------|
| Label color | Button function |
| White | For general TV operations |
| Green | For Teletext operations |

The operating instructions mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remain as in the manual.

SECTION 1-3 GENERAL- (KV-TF21P11)

WARNING

- Dangerously high voltages are present inside the TV.
- Operate the TV only between 220 – 240 V AC.

| | |
|---|---|
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

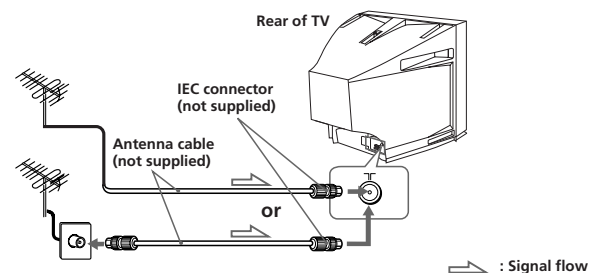
Using Your New TV

Getting Started

Step 1

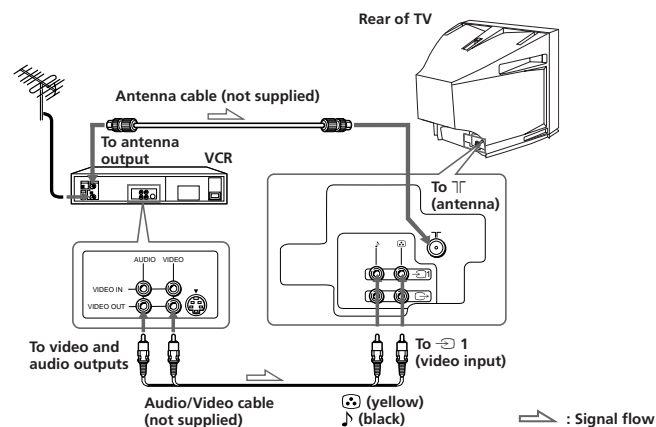
Connect the antenna

If you wish to connect a VCR, see the “Connecting a VCR” diagram below.



Connecting a VCR

To watch the video, press  (see page 12).



Notes

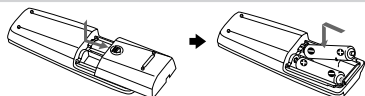
- If you connect a stereo VCR, connect the yellow plug to (the yellow jack) and the white plug to (the black jack).
- If you connect a VCR to the 1 (antenna) terminal, preset the signal output from the VCR to the program number 0 on the TV.
- When no signal is input to the connected video equipment, the TV screen becomes blue.

CAUTION

Do not connect the power cord until you have completed making all other connections; otherwise a minimum leakage current might flow through the antenna and other terminals to ground.

Step 2

Insert the batteries into the remote

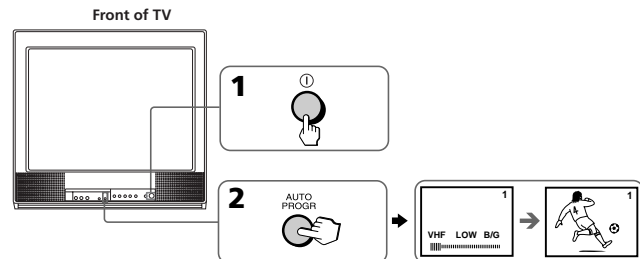


Note

- Do not use old batteries nor use different types of batteries together.

Step 3

Preset the channels automatically

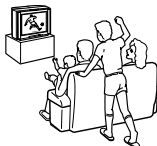


Tips

- If you want to stop automatic channel presetting, press SELECT twice.
- If your TV has preset an unwanted channel or cannot preset a particular channel, then preset your TV manually (see page 9).

Now You Are Ready. . .

To watch your TV, see page 11.



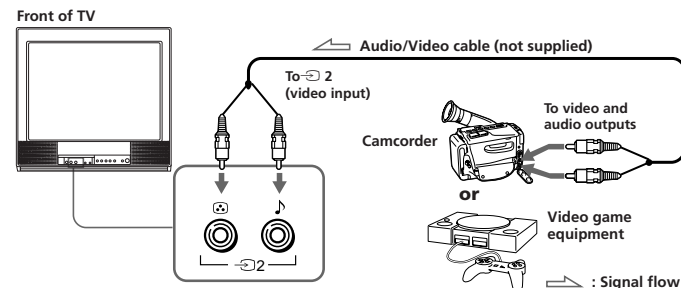
Using Your New TV

Connecting optional components

You can connect optional video components, such as a VCR, multi disc player, camcorder or video game.

To watch the picture of the connected equipment, press (see page 12).

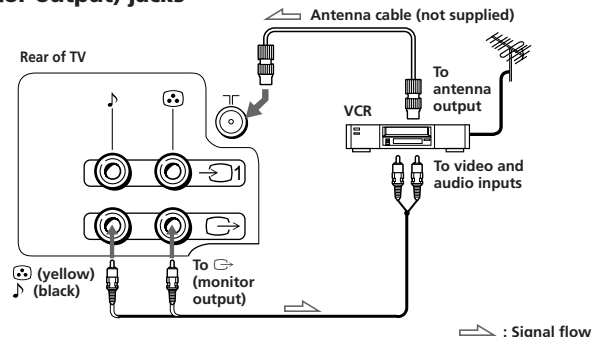
Connecting a camcorder/video game equipment using the (video input) jacks



Note

- You can also connect video equipment to the 1 (video input) jacks at the rear of your TV.

Connecting video equipment using the (monitor output) jacks



Note

- When connecting a stereo VCR, connect the yellow plug to (the yellow jack) and the white plug to (the black jack).

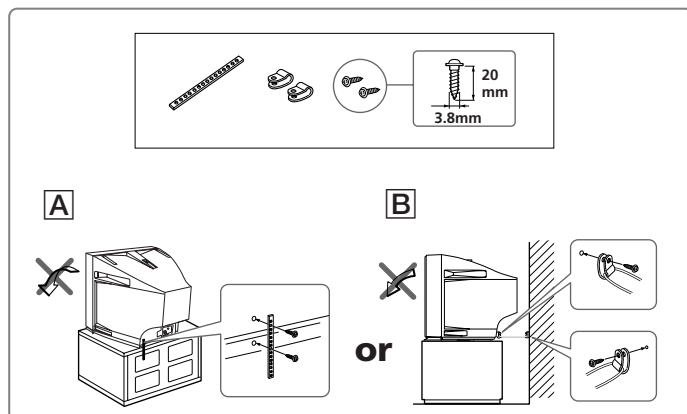
Securing the TV

To prevent the TV from falling, secure the TV using one of the following methods:

- A** With the supplied screws, attach the band to the TV stand and to the rear of the TV using the provided hole.

or

- B** Put the cord or chain through the clamps to secure the TV against a wall or pillar.



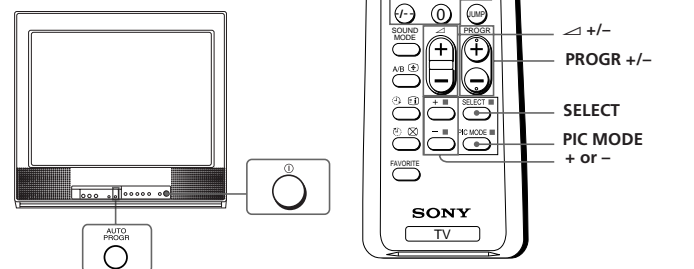
Note

- Use only the supplied screws. Use of other screws may damage the TV.

Using Your New TV

Presetting channels

You can preset up to 100 TV channels in numerical sequence from program number 1 using the remote and the buttons on your TV as well.

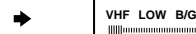


Presetting channels automatically

- 1** Press ① to turn on the TV.





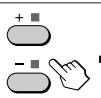
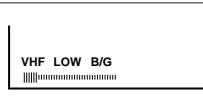


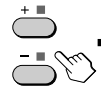


- 2** Press AUTO PROGR.



To preset channels automatically from a specified program number

- Press SELECT until "AUTO PROGRAM" appears.
- Press + or -.
The on-screen display will start flashing.
- Press PROGR +/- or the number buttons until the desired program number appears.
- Press + or -.

Presetting channels manually

- 1 Press SELECT until "MANUAL PROGRAM" appears.  → 
- 2 Press + or -.  → 
- 3 Press PROGR +/- or the number buttons until the desired program number appears.  or 
- 4 Press + or - until the desired channel picture appears.  → 
- 5 Press SELECT. 

Using Your New TV

To change the color system setting

If the color is abnormal when receiving programs through the ㄗ (antenna) terminal or the ㉔ (video input) jack

- (1) Press SELECT until "COL SYS" appears.

COL SYS: AUTO

- (2) Press + or - to select the appropriate color system until the color is optimal.

→ AUTO → PAL → NTSC 3.58 → NTSC 4.43 →

Tip

- Normally set "COL SYS" to "AUTO".

continued

Using Your New TV | 9

Presetting channels (continued)

Skipping program numbers

- 1 Press PROGR +/- or the number buttons until the unused or unwanted program number appears.
- 2 Press SELECT until "MANUAL PROGRAM" appears.
- 3 Press + or -.
- 4 Press PIC MODE.
- 5 Press SELECT.

To preset the skipped program number again

Preset the channel automatically or manually.

Tip

- You can also use SELECT and ㄗ +/- on the TV to preset channels and skip program numbers.

To use the fine tuning (FINE) function

The fine tuning (FINE) function may help to reduce the following problems: incomplete Teletext display, double images and lines moving across the TV screen.

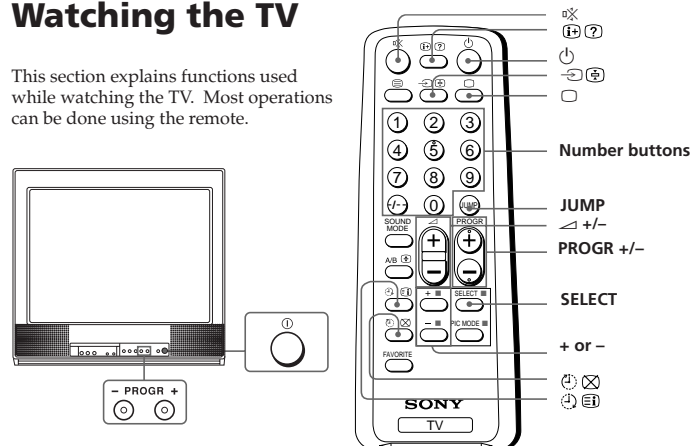
You can use the fine tuning function as below:

- (1) Select the program number you want to adjust.
- (2) Press SELECT until "MANUAL PROGRAM" appears on the screen.
- (3) Press + or - on the remote control once.
- (4) Press ㊄ ㊅ to display "FINE" on the screen.
- (5) Press + or - continuously until the above problems are minimized.
The + or - icon on the screen flashes while tuning.
- (6) Press SELECT to return to normal screen.

10 | Using Your New TV

Watching the TV

This section explains functions used while watching the TV. Most operations can be done using the remote.



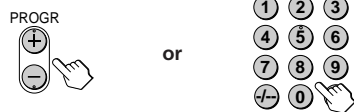
1 Press ① to turn on the TV.

When the TV is in the standby mode (the ① indicator on the TV is lit red), press ① on the remote or PROGR +/- on the TV.



2 Press PROGR +/- or the number buttons to select the TV program.

For double digit numbers, press +/-, then the number (e.g., for 25, press +/-, then 2 and 5).



3 Press +/- to adjust the volume.



Watching the TV (continued)

Additional tasks

| To | Do this |
|---|--|
| Turn off temporarily | Press ①. The ① indicator on the TV lights up red. |
| Turn off completely | Press ① on the TV. |
| Mute the sound | Press M. |
| Watch the video input (VCR, camcorder, etc.) | Press ⑤ to select "VIDEO 1" or "VIDEO 2". To return to the TV program, press ①. |
| Jump back to the previous channel | Press JUMP. |
| Display the on-screen information* | Press ⑦. |
| Adjust the volume of each TV program automatically | Press SELECT repeatedly until "INTELLIGENT VOL" appears, then press + or - to select "ON". To cancel, select "OFF". |
| Adjust the picture position when it is not aligned to the TV screen | Press SELECT repeatedly until "PIC ROTATION" appears, then press + or - to adjust the alignment of the picture position. |

PIC ROTATION ⑦ ⑦ ⑦

The ⑦ or ⑦ icon on the screen flashes while adjusting.

* The picture, sound, and either the program number or video mode are displayed. The on-screen display for the picture and sound information disappears after about 3 seconds.

Changing the on-screen display language

1 Press SELECT until "LANGUAGE / 语言:" appears on the screen.



2 Press + or - to select "中文".





Tip

- You can also use SELECT and +/- on the TV to select the on-screen display language.

continued


Setting the Wake Up timer

- Press  until the desired period of time appears.



WAKE UP TIMER:10M
After 10 minutes

WAKE UP TIMER:OFF
No Wake Up timer

WAKE UP TIMER:12H00M
After 12 hours
- Select the TV program or video mode you want to display when you wake up.
- Press  or set the Sleep timer if you want the TV to turn off automatically.

The  indicator on the TV lights up orange.


To cancel the Wake Up timer

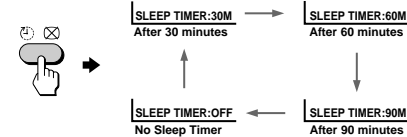
Press  until "WAKE UP TIMER: OFF" appears or turn off the TV's main power.

Notes


- The Wake Up timer starts immediately after the on-screen display disappears.
- If no buttons or controls are pressed for more than two hours after the TV is turned on using the Wake Up timer, the TV automatically goes into the standby mode. To continue watching the TV, press any button or control on the TV or the remote.

Setting the Sleep timer

Press  until the desired period of time appears.



To cancel the Sleep timer

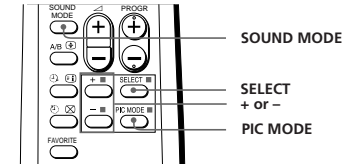
Press  until "SLEEP TIMER: OFF" appears or turn the TV off.

Advanced Operations

Customizing the picture and sound

You can customize the picture and sound by selecting the picture and sound modes or by adjusting its settings.

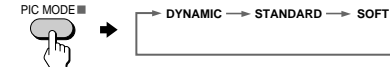
You can change the sound effect by selecting the surround mode.



Selecting the picture and sound modes

To select the picture mode

Press PIC MODE repeatedly until you get the desired picture mode.



| Select | To |
|----------|-----------------------------------|
| DYNAMIC | receive high contrast pictures. |
| STANDARD | receive normal contrast pictures. |
| SOFT | receive mild pictures. |

To select the sound mode

Press SOUND MODE repeatedly until you get the desired sound mode.



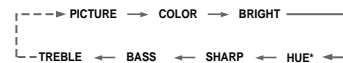
| Select | To |
|---------|---|
| DYNAMIC | listen to dynamic and clear sound that emphasizes the low and high sound. |
| DRAMA | listen to sound that emphasizes vocals and background music. |
| SOFT | receive soft sound. |

Adjusting the picture and sound settings

- 1 Press SELECT until the desired setting appears.



Each time you press SELECT, the setting item will change as follows:



- 2 Press + or – to adjust the item.



- 3 To adjust other items, repeat steps 1 to 2.

* "HUE" can be adjusted for the NTSC system only.

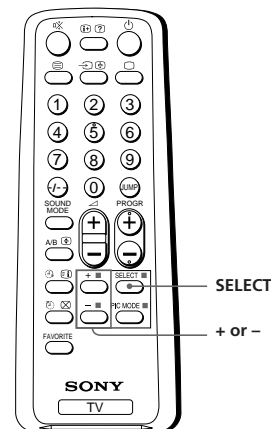
Notes

- When you select a picture or sound mode, the adjusted settings will be reset according to the selected mode.
- You can also use SELECT and Δ +/- on the TV to adjust the picture and sound settings.

Advanced Operations

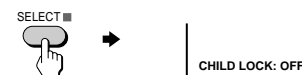
Blocking the channels (CHILD LOCK)

You can prevent a child from watching certain programs by using the buttons on the remote control.





- 1 Select the TV program you want to lock.

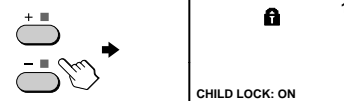
- 2 Press SELECT until "CHILD LOCK" appears on the screen.



- 3 Press + or – to select "ON".

The  symbol appears on the screen.

To unlock the channel, press + or – to select "OFF". The  symbol disappears from the screen.

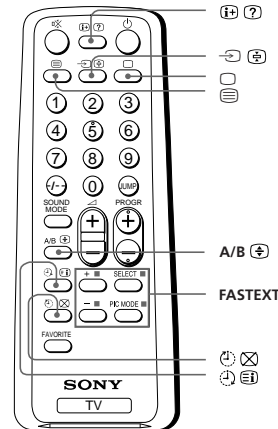


Note


- If you preset a locked channel, that particular channel will be unlocked automatically.

Viewing Teletext

TV stations broadcast an information service called Teletext via some TV channels. Teletext allows you to receive various information, such as shares market or news.



Displaying Teletext

- 1 Select a TV channel that carries the Teletext broadcast you want to watch.
- 2 Press  to display the text.

A Teletext page (normally the index page) is displayed. If there is no Teletext broadcast, "100" is displayed at the top left corner of the screen.



To turn off Teletext

Press \square .

Viewing Teletext (continued)

Additional Teletext tasks

| To | Do this |
|---|--|
| display a Teletext page on the TV picture | Press . Each time you press , the screen changes as follows: Teletext → Teletext and TV → TV. |
| check the contents of a Teletext service | Press . |
| select a Teletext page | An overview of the Teletext contents and page numbers appear on the screen. Press the number buttons to enter the three-digit page number of the desired Teletext page.* If you make a mistake, reenter the correct page number. To access the next or previous page, press PROG +/-. |
| hold a Teletext page (stop the page from scrolling) | Press to display the symbol “” at the top left corner of the screen. To resume normal Teletext operation, press or . |
| reveal concealed information (e.g., an answer to a quiz) | Press . |
| enlarge the Teletext display | To conceal the information, press the button again. Press A/B . |
| wait for a Teletext page while watching a TV program | Each time you press A/B , the Teletext display changes as follows: Enlarge upper half → Enlarge lower half → Normal size. 1 Enter the Teletext page number that you want to refer to, then press . |
| | 2 When the page number is displayed, press to show the text. |

* You can also select a Teletext page of any page number that appears in the colored column at the bottom of the screen using the corresponding color-coded button on the remote.

Using FASTEXT



This feature allows you to quickly access a Teletext page that uses FASTEXT. When a FASTEXT program is broadcasted, the colored menus appear at the bottom of the screen. The colors of the menus correspond to the red, green, yellow, and blue color-coded buttons on the remote.

To access a FASTEXT menu

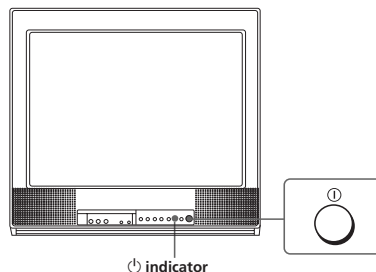
Press the color-coded button on the remote corresponding to the menu you want. The menu page appears on the screen after several seconds.





Additional Information

Self-diagnosis function

Your TV is equipped with a self-diagnosis function. If there is a problem with your TV, the  indicator flashes red. The number of times the  indicator flashes indicates the possible causes.

Front of TV

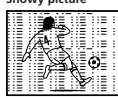

















- 1** Check that the  indicator flashes red a number of times between 3-second intervals.
- 2** Count the number of times the  indicator flashes.
- 3** Press  (main power) to turn off your TV.
- 4** Inform your nearest Sony service center about the number of times the  indicator flashes.
Be sure to note the model name and serial number located on the rear of your TV.

Additional Information


Troubleshooting

If you find any problem while viewing your TV, please check the following guide. If any problem persists, contact your Sony dealer.

| Symptom | Solutions | Possible cause |
|---|--|--|
| Snowy picture  | <ul style="list-style-type: none"> Check the antenna cable and connection on the TV, VCR and on the wall. (page 4) Press SELECT until "MANUAL PROGRAM" appears on the screen then preset the channel again. (page 9) | <ul style="list-style-type: none"> Connection is loose or the cable is damaged. Channel presetting is inappropriate or incomplete. |
| Noisy sound  | <ul style="list-style-type: none"> Check the antenna type (VHF/UHF). Contact a Sony dealer for advice. Adjust the antenna direction. Contact a Sony dealer for advice. Try using a booster. | <ul style="list-style-type: none"> The antenna type is inappropriate. The antenna direction is inappropriate. Signal transmission is low. |
| Distorted picture  | <ul style="list-style-type: none"> Turn off or disconnect the booster if it is in use. | <ul style="list-style-type: none"> Broadcast signals are too strong. |
| Noisy sound  | | |
| Good picture  | <ul style="list-style-type: none"> If the sound of all the channels are noisy, press AUTO PROGR to preset the channels again (page 8). | <ul style="list-style-type: none"> The channel presetting is inappropriate or incomplete. |
| Noisy sound  | | |
| No picture  | <ul style="list-style-type: none"> Check the power cord, antenna and the VCR connections. Press  (power). Press  (main power) on the TV to turn off the TV for about five seconds, then turn it on again. | <ul style="list-style-type: none"> The power cord, antenna or VCR is not connected. The TV is not turned on. |
| No sound  | | |

| Symptom | Solutions | Possible cause |
|---|---|--|
| Good picture  | <ul style="list-style-type: none"> Press \triangleleft + to increase the volume level. Press \times to cancel the muting. | <ul style="list-style-type: none"> The volume level is too low. The sound is muted. |
| No sound  | | |
| Dotted lines or stripes  | <ul style="list-style-type: none"> Do not use a hair dryer or other equipment near the TV. Adjust the antenna direction for minimum interference. Contact a Sony dealer for advice. | <ul style="list-style-type: none"> There is local interference from cars, neon signs, hair dryers, power generators, etc. |
| Double images or "ghosts"  | <ul style="list-style-type: none"> Use a highly directional antenna. Use the fine tuning (FINE) function. (page 10) Adjust the antenna direction. Contact a Sony dealer for advice. Turn off or disconnect the booster if it is in use. | <ul style="list-style-type: none"> Broadcast signals are reflected by nearby mountains or buildings. The antenna direction is inappropriate. Use of a booster is inappropriate. |
| No color  | <ul style="list-style-type: none"> Press SELECT until "COLOR" appears on the screen, then press + or - to adjust the color level. (page 15) Press SELECT until "COL SYS" appears on the screen, then check the color system setting (usually set this to "AUTO"). (page 10). Adjust the antenna direction. Contact a Sony dealer for advice. | <ul style="list-style-type: none"> The color level setting is too low. The color system setting is inappropriate. The antenna direction is inappropriate. |
| Abnormal color patches  | <ul style="list-style-type: none"> Keep external speakers or other electrical equipment away from the TV. Do not move the TV while the TV is turned on. Press \odot (main power) on the TV to turn off the TV for about five minutes, then turn it on again. | <ul style="list-style-type: none"> The magnetic disturbance from external speakers or other equipment, or the direction of the earth's magnetic field may affect the TV. |

Troubleshooting (continued)

| Symptom | Solutions | Possible cause |
|---|---|--|
| "100" appears on the top of the screen and there is no Teletext display. | — | <ul style="list-style-type: none"> The channel carries no Teletext broadcast. |
| Teletext display is incomplete (snowy picture or double images). | <ul style="list-style-type: none"> Check the antenna cable and connection on the TV, VCR, and at the wall. (page 4) Adjust the antenna direction. Contact a Sony dealer for advice. Try using a booster. Use the fine tuning (FINE) function. (page 10) | <ul style="list-style-type: none"> Connection is loose or the cable is damaged. The antenna direction is inappropriate. Signal transmission is too low. |
| Picture slant  | <ul style="list-style-type: none"> Press SELECT until "PIC ROTATION" appears on the screen, then press + or - to align the picture to the TV screen. (page 12) | <ul style="list-style-type: none"> The terrestrial magnetism affects your TV set. |
| Lines moving across the TV screen. | <ul style="list-style-type: none"> Use the fine tuning (FINE) function. (page 10) | <ul style="list-style-type: none"> There is interference from external sources, e.g., heavy machineries, nearby broadcast station. |
| The \odot indicator on your TV flashes red a number of times between 3-second intervals. | <ul style="list-style-type: none"> Contact your nearest Sony service center. (page 19) | <ul style="list-style-type: none"> Your TV may need service. |
| TV cabinet creaks. | — | <ul style="list-style-type: none"> Changes in room temperature sometimes make the TV cabinet expand or contract, making a noise. This does not indicate a malfunction. |
| A "boom" sound is heard when the TV is turned on. | — | <ul style="list-style-type: none"> The TV's demagnetizing function is working. This does not indicate a malfunction. |

continued

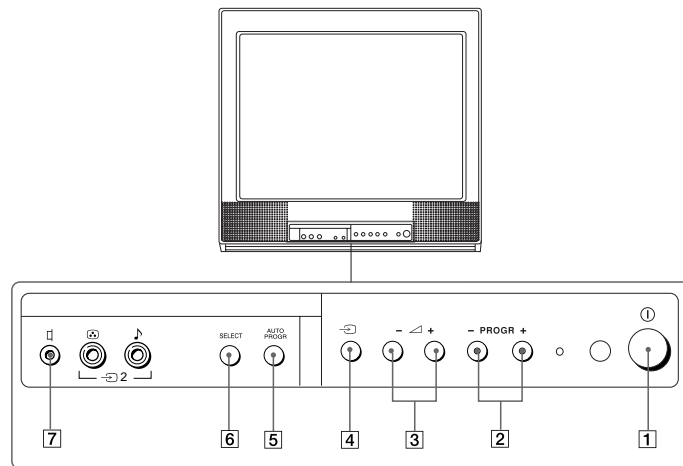
Additional Information | 21

22 | Additional Information

Identifying parts and controls

Refer to the pages indicated in parentheses () for details.

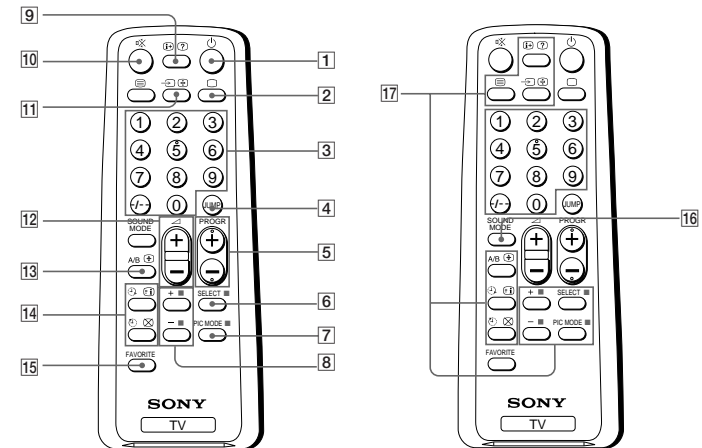
Front panel



- 1 ① (main power) button (5)
- 2 PROGR +/- (program) buttons (11)
- 3 ▲/▼ (volume) buttons (11)
- 4 TV/VIDEO button (12)
- 5 AUTO PROGRAM (program) button (5)
- 6 SELECT button (9)
- 7 j (earphone) jack

Identifying parts and controls (continued)

Remote Control



- 1 ① (power) button (11)
- 2 □ (TV) button (12)
- 3 Number buttons (11)
- 4 JUMP button (12)
- 5 PROGR +/- buttons (11)
- 6 SELECT button (9)
- 7 PIC MODE button (14)
- 8 + or - buttons (9)
- 9 ④ (display) button (12)
- 10 ⑤ (mute) button (12)
- 11 TV/VIDEO button (12)
- 12 ▲/▼ (volume) buttons (11)
- 13 A/B button (not used for this model)
- 14 Timer setting buttons (13)
 - ⌚ (wake up timer)
 - ⌚ (sleep timer)

- 15 FAVORITE button (not used for this model)
- 16 SOUND MODE button (14)
- 17 Teletext operation buttons (19, 20)
 - ③ (text) ④ (enlarge)
 - ⑤ (reveal) ⑥ (hold)
 - ⑦ (index) ⑧ (text clear)
 - (FASTEXT: red, green, yellow, blue)

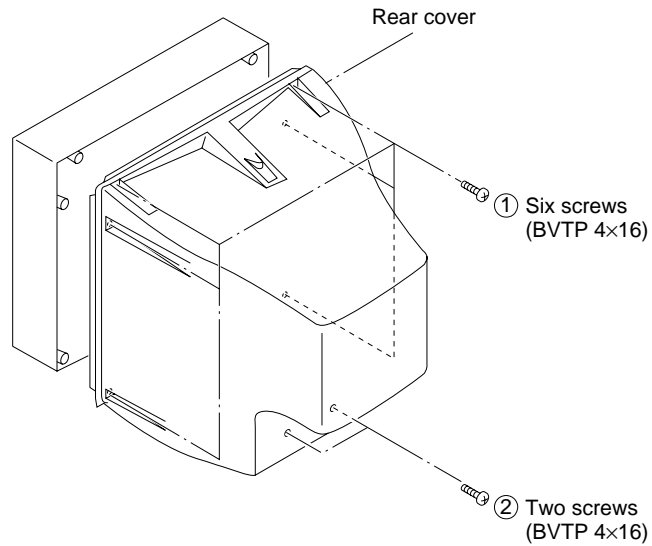
Names/symbols of buttons on the remote are indicated in different colors to represent the available functions.

| Label color | Button function |
|-------------|---------------------------|
| White | For general TV operations |
| Green | For Teletext operations |

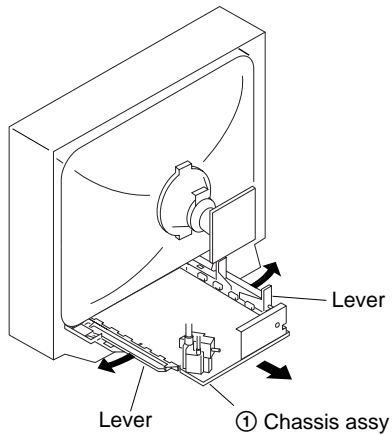
continued

SECTION 2 DISASSEMBLY

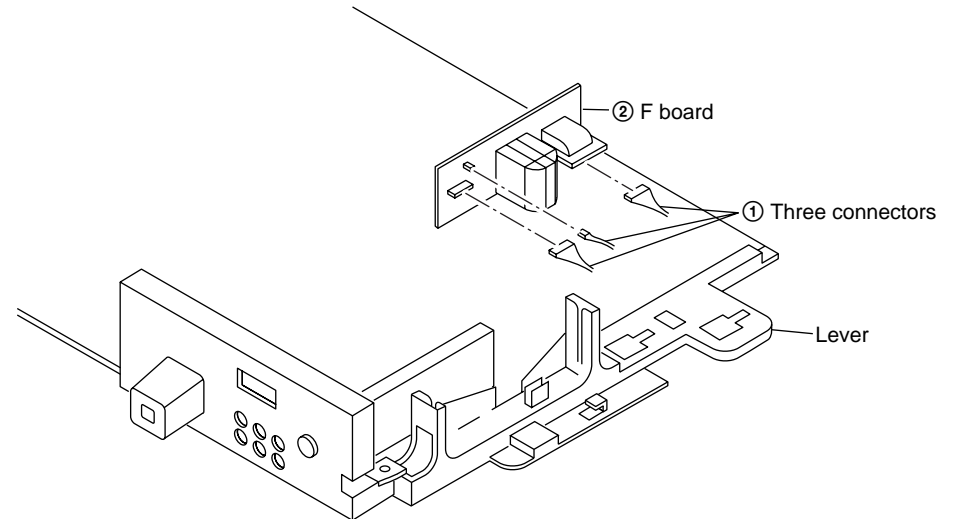
2-1. REAR COVER REMOVAL



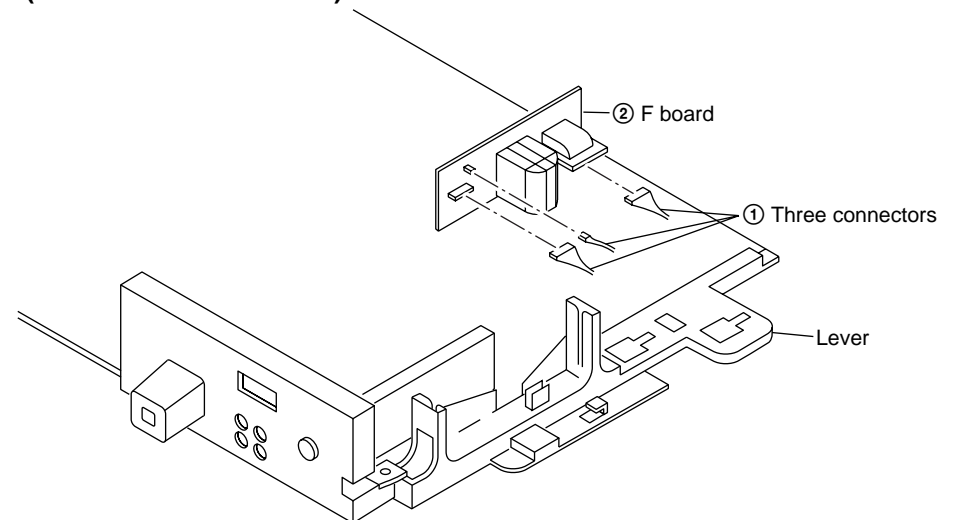
2-2. CHASSIS ASSY REMOVAL



2-3. F BRACKET REMOVAL (KV-TF21M61/TF21M90)

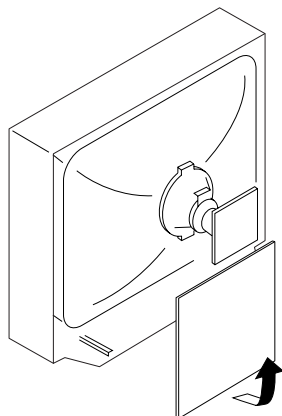


(KV-PF21M70/TF21P11)

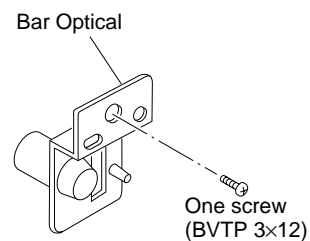


2-4. SERVICE POSITION

(Note: Remove F Bracket first.)



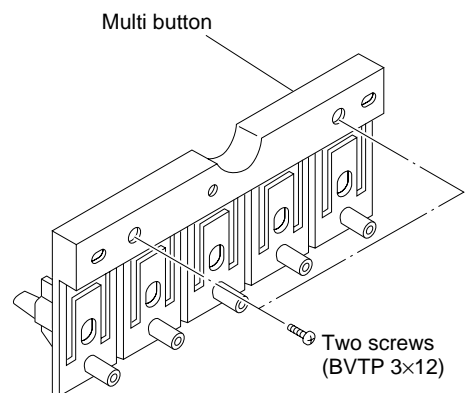
2-5-2. REPLACEMENT OF BAR OPTICAL



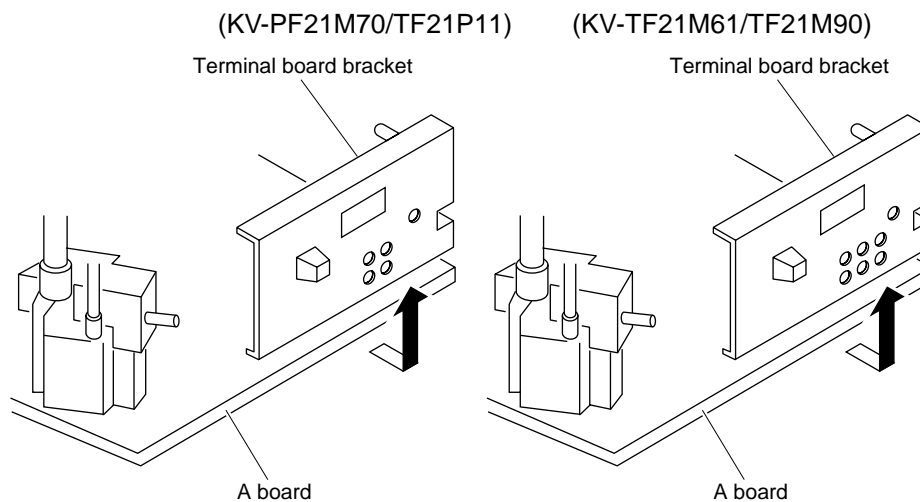
2-5. REPLACEMENT OF PARTS

For replacement of the Multi Button and Bar Optical ,unscrew to exchange with the new parts, and fix them with screws (+BVTP) respectively.

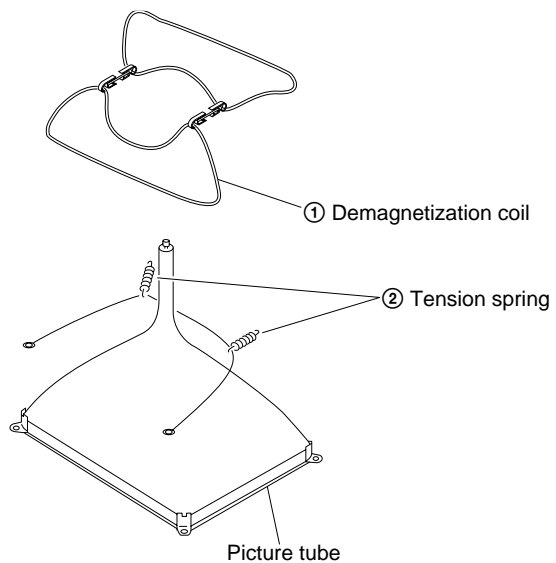
2-5-1. REPLACEMENT OF MULTI BUTTON



2-6. TERMINAL BRACKET REMOVAL

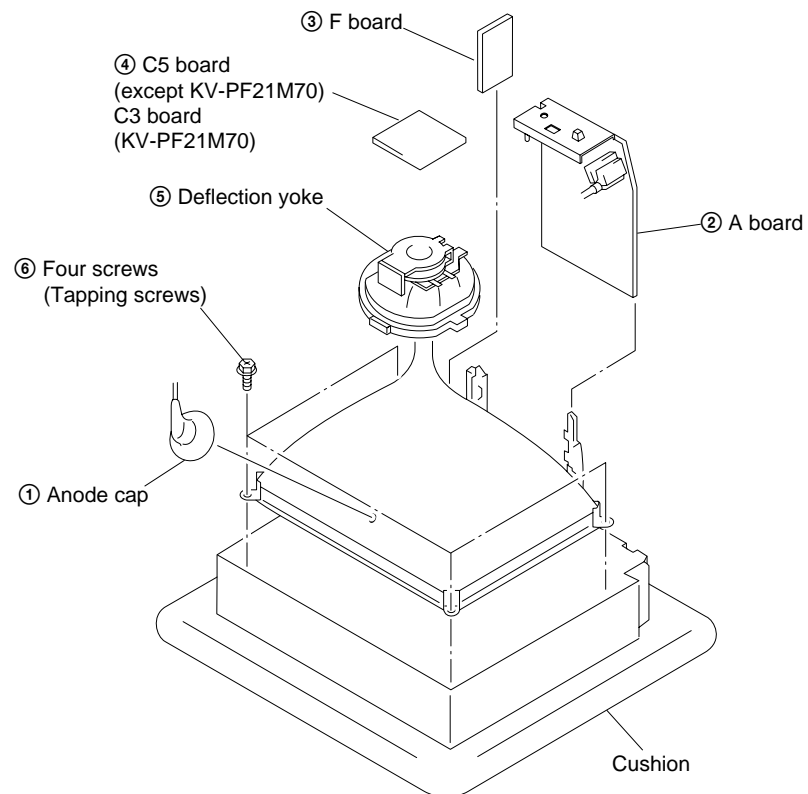


2-7. DEGAUSS COIL REMOVAL



2-8. PICTURE TUBE REMOVAL

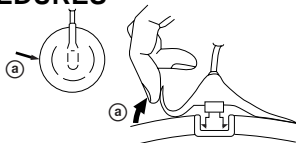
NOTE : The picture tube for OCE model is upside down, and the position for the anode cap and tension springs are changed accordingly.



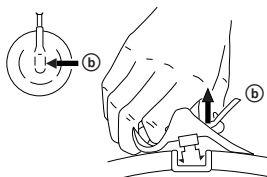
•REMOVAL OF ANODE-CAP

NOTE : After removing the anode, short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield or carbon paint on the CRT.

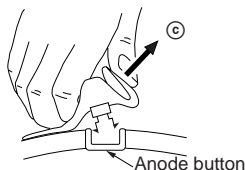
•REMOVING PROCEDURES



- ① Turn up one side of the rubber cap in the direction indicated by the arrow ①.



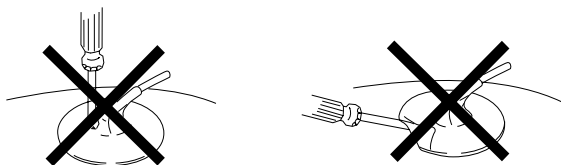
- ② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ②.



- ③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling it up in the direction of the arrow ③.

• HOW TO HANDLE AN ANODE-CAP

- ① Do not damage the surface of anode-caps with sharp shaped objects.
- ② Do not press the rubber too hard so as not to damage the inside of anode-cap.
A metal fitting called the shatter-hook terminal is built into the rubber.
- ③ Do not turn the foot of rubber over too hard.
The shatter-hook terminal will stick out or damage the rubber.



SECTION 3

SET-UP ADJUSTMENTS

- The following adjustments should be made when a complete realignment is required or a new picture tube is installed.
- These adjustments should be performed with rated power supply voltage unless otherwise noted.

Controls and switches should be set as follows unless otherwise noted:

PICTURE control normal
BRIGHTNESS control normal

Perform the adjustments in the following order :

1. Beam Landing
2. Convergence
3. Focus
4. White Balance

Note : Test Equipment Required.

1. Color-bar/Pattern Generator
2. Degausser
3. Oscilloscope

Preparation :

- In order to reduce the influence of geomagnetism on the set's picture tube, face it east or west.
- Switch on the set's power and degauss with the degausser.

3-1. BEAM LANDING

1. Input a white signal with the pattern generator.
Contrast } normal
Brightness }
2. Set the pattern generator raster signal to a green raster.
3. Move the deflection yoke to the rear and adjust with the purity control so that the green is at the center and the blue and the red take up equally sized areas on each side.
(See Figures 3-1 through 3-3.)
4. Move the deflection yoke forward and adjust so that the entire screen is green. (See Figure 3-1.)
5. Switch the raster signal to blue, then to red and verify the condition.
6. When the position of the deflection yoke has been decided, fasten the deflection yoke with the screws and DY spacers.
7. If the beam does not land correctly in all the corners, use a magnet to adjust it.
(See Figure 3-4.)

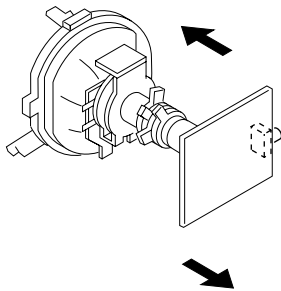


Fig. 3-1

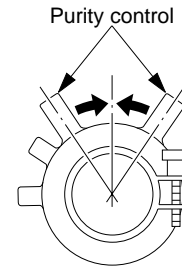


Fig. 3-2

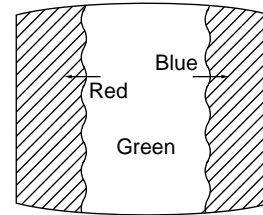


Fig. 3-3

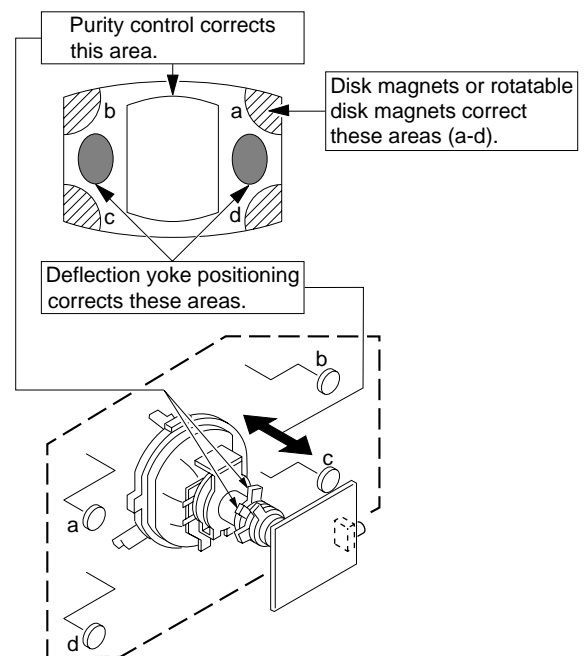


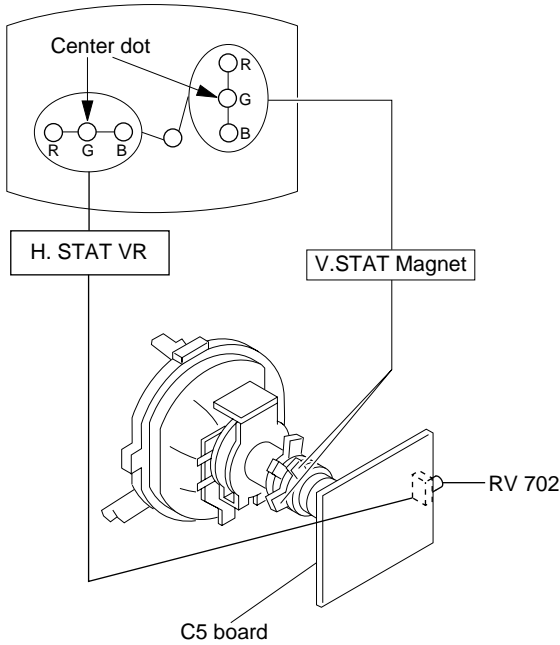
Fig. 3-4

3-2. CONVERGENCE

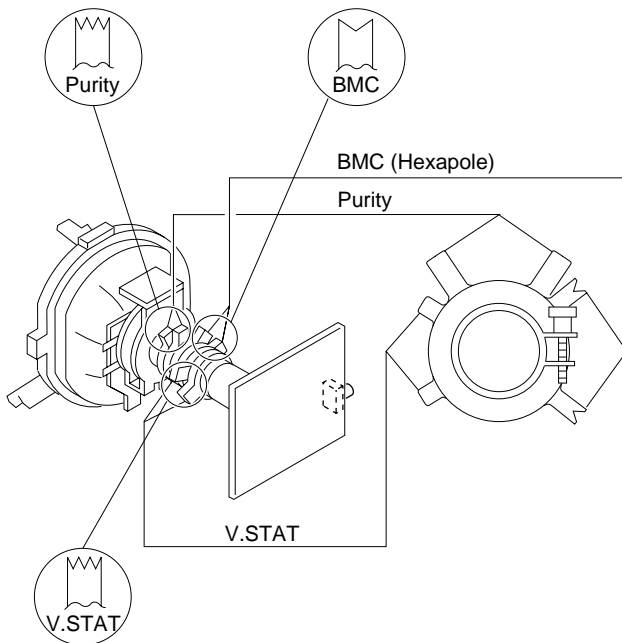
Preparation :

- Before starting this adjustment, adjust the focus, horizontal size and vertical size.
- Minimize the brightness setting.
- Provide dot pattern.

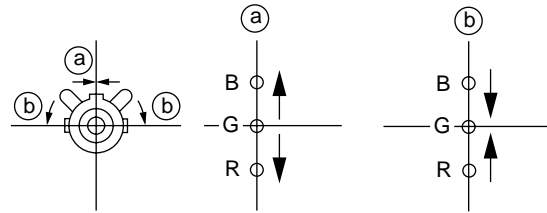
(1) Horizontal and Vertical Static Convergence



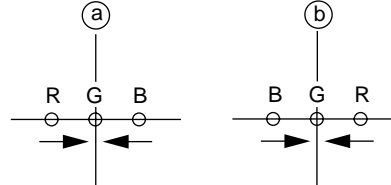
(Moving vertically), adjust the V. STAT magnet so that the red, green and blue dots are on top of each other at the center of the screen.



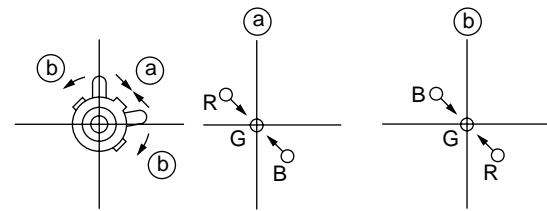
① V. STAT



② H. STAT VR

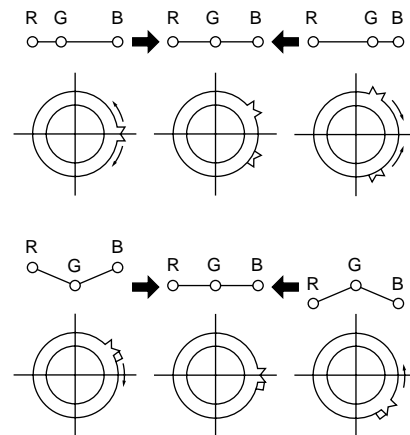


③



④ BMC (Hexapole) Magnet.

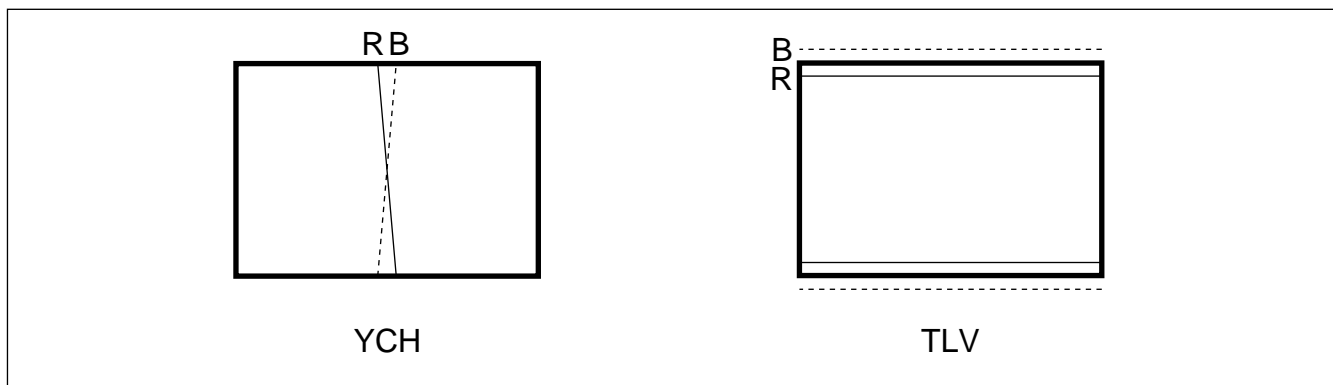
If the red, green and blue dots are not balanced or aligned, then use the BMC magnet to adjust in the manner described below.



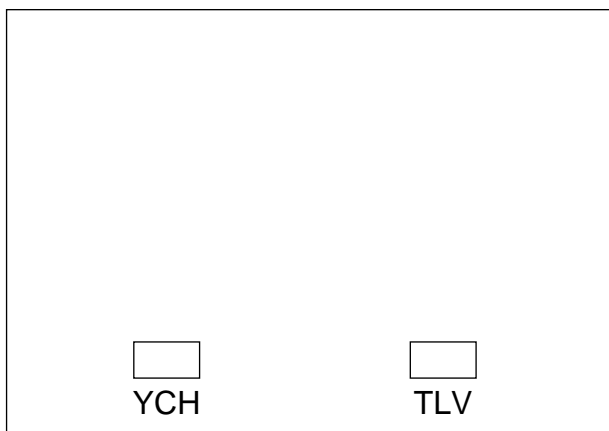
(2) Dynamic Convergence Adjustment

Preparation:

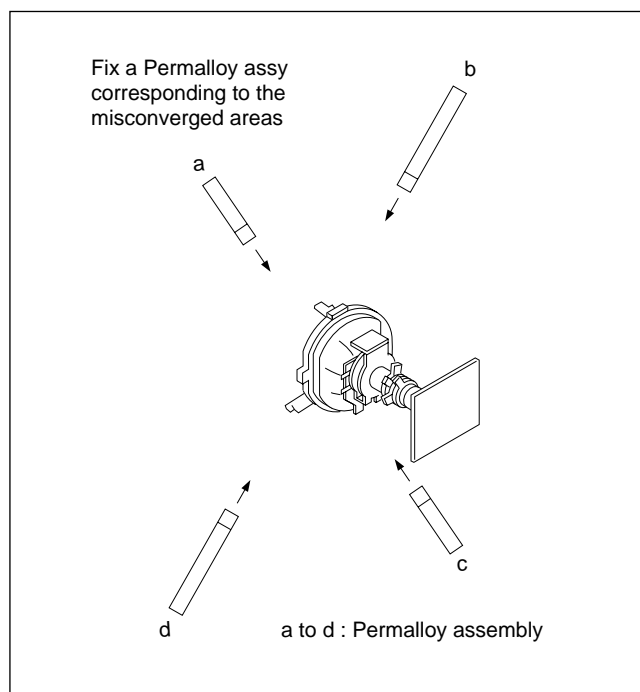
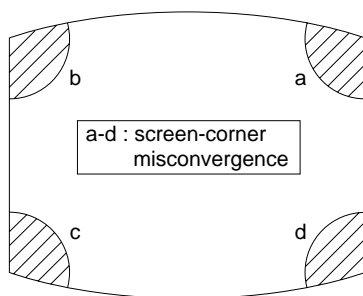
- Before starting this adjustment, adjust the horizontal static convergence and the vertical static convergence



on DY

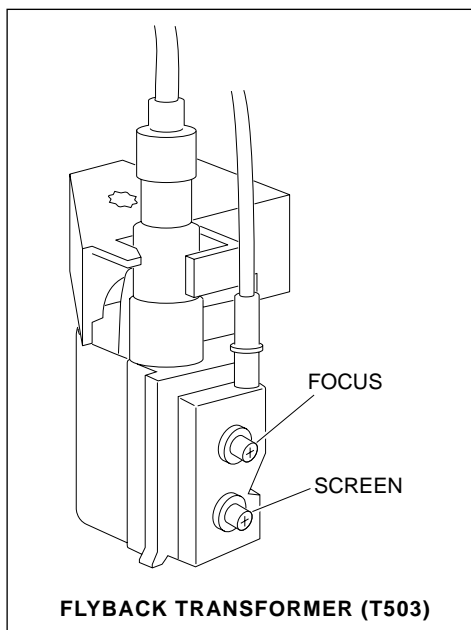


(3) Screen-corner Convergence



3-3. FOCUS ADJUSTMENT

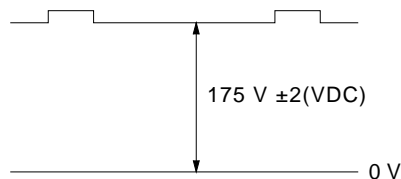
Adjust FOCUS control on the flyback transformer for the best focus.



3-4. G2 (SCREEN) AND WHITE BALANCE ADJUSTMENTS

1. G2 (SCREEN) ADJUSTMENT

- 1) Set the PICTURE to normal.
- 2) Put to VIDEO input mode without signals.
- 3) Connect R, G and B of the C5 board cathode to the oscilloscope.
- 4) Adjust BRIGHTNESS to obtain the cathode voltage to the value below.
- 5) Adjust G2 (Screen) on FBT until picture shows the point before cut-off.

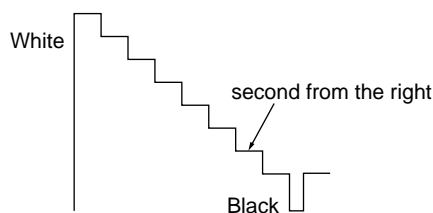


2. WHITE BALANCE ADJUSTMENT

- 1) Set to Service Mode (Refer Section 4-1: ADJUSTMENTS WITH COMMANDER).
- 2) Input white raster signal.
- 3) Set the PICTURE to minimum.
- 4) Select GCT (WHB 4) and BCT (WHB 5) with [1] and [4], and adjust the level with [3] and [6] for the best white balance.
- 5) Set the PICTURE to maximum.
- 6) Select GDR (WHB 1) and BDR (WHB 2) with [1] and [4], and adjust the level with [3] and [6] for the best white balance.
- 7) Write into the memory by pressing [MUTING] then [0].

3. SUB BRIGHT ADJUSTMENT

- 1) Set to service mode.
- 2) Input a staircase signal of black to white from the pattern generator.
- 3) BRIGHTNESS50%.
PICTUREMINIMUM
- 4) Select SBR (WHB7) with [1] and [4], and adjust SBR (WHB7) level with [3] and [6] so that the second stripe from the right is dimly lit.



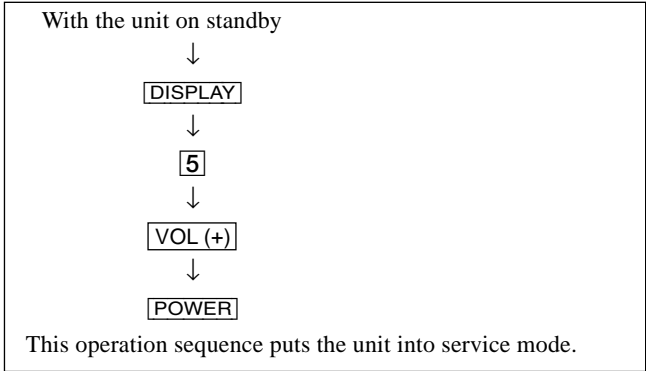
SECTION 4

CIRCUIT ADJUSTMENTS

4-1. ADJUSTMENTS WITH COMMANDER

Service adjustments are made with the RM-952 that comes with this unit.

a. ENTERING SERVICE MODE



b. METHOD OF CANCELLATION FROM SERVICE MODE

Set the standby condition (Press **POWER** button on the commander), then press **POWER** button again, hereupon it becomes TV mode.

c. METHOD OF WRITE INTO MEMORY

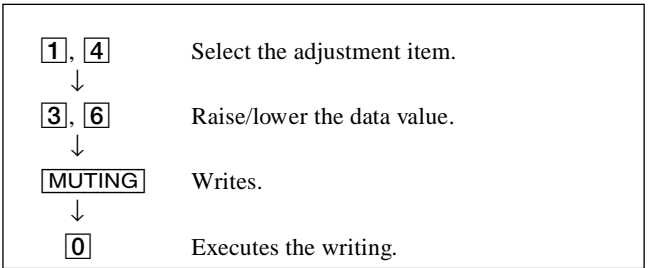
- 1) Set to Service Mode.
- 2) Press **1** (UP) and **4** (DOWN), select an item of adjustment.
- 3) Press **MUTING** button and it will indicate WRITE on the screen.
- 4) Press **0** button to write into memory.

d. MEMORY WRITE CONFIRMATION METHOD

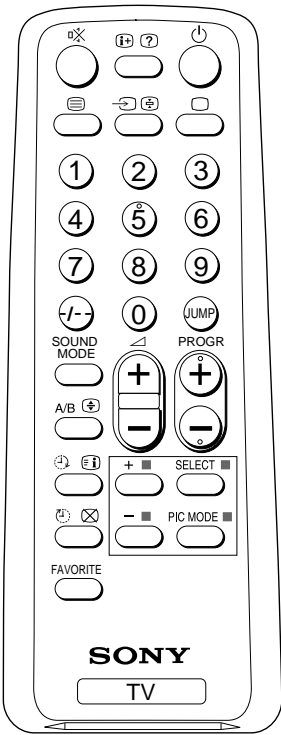
- 1) After adjustment, pull out the plug from AC outlet, and then plug into AC outlet again.
- 2) Turn the power switch ON and set to Service Mode.
- 3) Call the adjusted items again to confirm adjustments were made.

The screen display is :

| Device Name | Item Name | Item No | Data | Marking of virgin NVM | Mode | |
|-------------------------|------------------|---------|------|-----------------------|-----------------------------|----------------------|
| GEO | HPS | 00 | 1C | ■ | SERVICE | 50 ← PAL, SECAM : 50 |
| 623S | 59 | 1.0C | 7F | 0 | 000A | NTSC : 60 |
| Suffix No (OEM Code) | Software version | | | | Total Power-On time (hours) | |



- 7**, **0** All the data becomes the values in memory.
- 8**, **0** All user control goes to the standard state.
- 5**, **0** Service data initialization (Be sure not to use usually.)
- 2**, **0** Write 50Hz adjustment data to 60Hz, or vice versa.



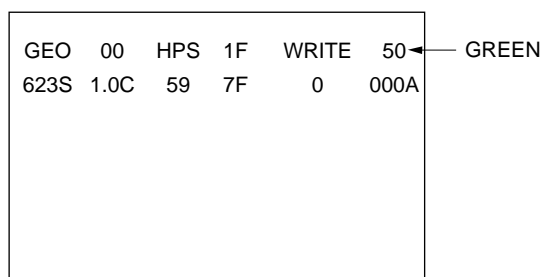
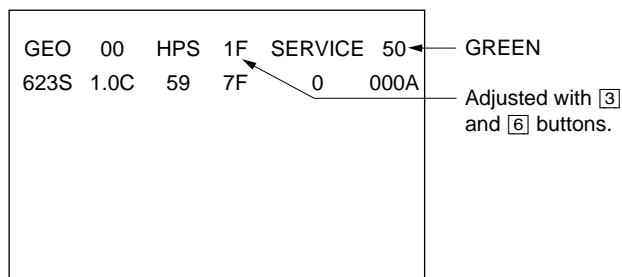
RM-952

4-2. ADJUSTMENT METHOD

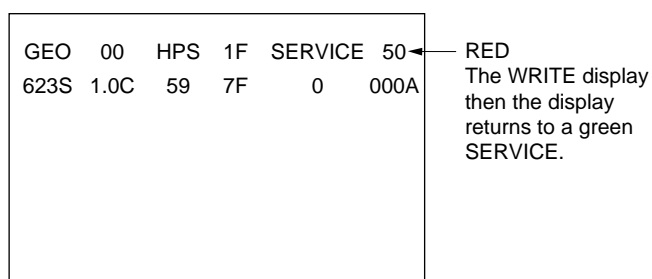
Item Number 00 of device GEO

This explanation uses H-Position as an example.

1. Select "GEO 00 HPS" with the **[1]** and **[4]** buttons.
2. Raise/lower the data with the **[3]** and **[6]** buttons.
3. Select the optimum state. (The standard is 1F for PAL reception.)
4. Write with the **[MUTING]** button. (The display changes to WRITE.)
5. Execute the writing with the **[0]** button. (The WRITE display will be changed to red color while excuting, and back to SERVICE.)



Written with **[MUTING]**



Write executed with **[0]**

Use the same method for all Items. Use **[1]** and **[4]** to select the adjustment item, use **[3]** and **[6]** to adjust, write with **[MUTING]**, then execute the write with **[0]**.

- Note :**
1. In **[WRITE]**, the data for all items are written into memory together.
 2. For adjustment items that have different standard data between 50Hz or 60Hz, be sure to use the respective input signal after adjustment.

Adjustment Item Table

| Device Name | Functionality | | Note | Data Range | Function | Note for Different Data | Register No. (bit) | Slava Address | RAM Address (bit) |
|-------------|---------------|------|------|------------|-----------------------------|-------------------------|--------------------|---------------|-------------------|
| | No | Name | | | | | | | |
| GEO | 0 | HPS | 7 | 3F | H Position | 50/60HZ | 12 (7-2) | CXA2130S(88H) | 82 (7-2) |
| | 1 | HSZ | 1F | 3F | H Size | 50/60HZ | 11 (7-2) | | 81 (7-2) |
| | 2 | PAP | 1F | 3F | Pin Amp | 50/60HZ | 13 (7-2) | | 83 (7-2) |
| | 3 | TLT | 7 | 0F | Trapezium | 50/60HZ | 15 (7-4) | | 85 (7-4) |
| | 4 | VPS | 1F | 3F | V Position | 50/60HZ | 0F (7-2) | | 7F (7-2) |
| | 5 | VSZ | 1F | 3F | V Size | 50/60HZ | 0E (7-2) | | 7E (7-2) |
| | 6 | SCO | 7 | 0F | S Correction | 50/60HZ | 10 (7-4) | | 80 (7-4) |
| | 7 | VLN | 7 | 0F | V Linearity | 50/60HZ | 10 (3-0) | | 80 (3-0) |
| | 8 | BOW | 7 | 0F | AFC Bow | 50/60HZ | 16 (7-4) | | 86 (7-4) |
| | 9 | AGL | 7 | 0F | AFC-Angle | 50/60HZ | 16 (3-0) | | 86 (3-0) |
| | 10 | UPN | 1F | 3F | Upper Pin | 50/60HZ | 14 (7-2) | | 84 (7-2) |
| | 11 | LPN | 1F | 3F | Lower Pin | 50/60HZ | 18 (7-2) | | 88 (7-2) |
| | 12 | HBL | 0 | 1 | H Blanking on/off | | 18 (1) | | 67 (1) |
| | 13 | LBL | 7 | 0F | Left H Blanking | 50/60HZ | 17 (7-4) | | 87 (7-4) |
| | 14 | RBL | 7 | 0F | Right H Blanking | 50/60HZ | 17 (3-0) | | 87 (3-0) |
| WHB | 0 | RDR | 2A | 3F | R Drive | DYNAMIC/others | 09 (7-2) | CXA2130S(88H) | 8F (7-2) |
| | 1 | GDR | 2A | 3F | G Drive | DYNAMIC/others | 0A (7-2) | | 90 (7-2) |
| | 2 | BDR | 2A | 3F | B Drive | DYNAMIC/others | 0B (7-2) | | 91 (7-2) |
| | 3 | RCT | 7 | 0F | R Cutoff | SECAM/others | 07 (3-0) | | 93 (3-0) |
| | 4 | GCT | 7 | 0F | G Cutoff | SECAM/others | 08 (7-4) | | 94 (7-4) |
| | 5 | BCT | 7 | 0F | B Cutoff | SECAM/others | 08 (3-0) | | 94 (3-0) |
| | 6 | BMN | 15 | 1F | Brightness Minimum Data | | | | 97 |
| SAJ | 7 | SBR | 28 | 3F | Sub Brightness Control | | | CXA2130S(88H) | 98 |
| | 0 | PMX | 33 | 3F | Picture Maximum Data | | | | 96 |
| | 1 | SHU | 8 | 0F | Sub Hue Control | TV/Video | | | 99 |
| | 2 | SSH | 3 | 0F | Sub Sharpness Control 03/08 | TV/Video | | | 9A |
| VP | 3 | SCL | 1F | 3F | Sub Color Control | NTSC/others | | CXA2130S(88H) | 9B |
| | 0 | EHT | 4 | 0F | EHT Comp | 50/60HZ | 15 (3-0) | | 85 (3-0) |
| | 1 | GMA | 2 | 03 | Gamma Correction | Refer NVM Map A4 | 0B (1-0) | | 1A3 (1-0) |
| | 2 | YDL | 6 | 0F | Y Delay | PAL/SECAM/NTSC | 0C (3-0) | | 8C (3-0) |
| | 3 | SST | 1 | 03 | SECAM ID Start Position | | 1B (1-0) | | 6A (1-0) |
| | 4 | SSP | 1 | 03 | SECAM ID Stop Position | | 1B (3-2) | | 6A (3-2) |
| | 5 | SLV | 2 | 03 | SECAM ID Level | | 1C (1-0) | | 6B (1-0) |
| | 6 | SBF | 22 | 3F | SECAM BELL f0 | | 1C (7-2) | | 6B (7-2) |
| | 7 | DYC | 0 | 1 | Dynamic Color on/off | | 0A (1) | | 59 (1) |
| | 8 | ABL | 1 | 1 | ABL Mode Switching | STANDARD Always 0 | 09 (1) | | 58 (1) |
| | 9 | VTH | 1 | 1 | ABL Detection Vth Switching | | 09 (0) | | 58 (0) |
| | 10 | SFO | 1 | 1 | FO Switching for Sharpness | NTSC/others | 05 (1) | | 198 (1) |
| | 11 | DCX | 1 | 1 | DC Trans. Ratio Switching | | 06 (1) | | 55 (1) |
| | 12 | SHT | 1 | 1 | Pre-/Overshoot ratio Switch | NTSC/others | 06 (0) | | 199 (0) |

Adjustment Item Table

| Device Name | Functionality | | Note | Data Range | Function | Note for Different Data | Register No. (bit) | Slava Address | RAM Address (bit) |
|-------------|---------------|------|------|---------------------------------|-------------------------------------|-------------------------|--------------------|-------------------|-------------------|
| | No | Name | | | | | | | |
| VP | 13 | HDW | 0 | 1 | H Drive Pulse Width Switch | TV/Video/Text | 00 (6) | | 4F (6) |
| | 14 | AFC | 1 | 03 | AFC Gain Control | | 0F (1-0) | | 8D (1-0) |
| | 15 | HOS | 7 | 0F | H Oscillation | | 0C (7-4) | | 5B (7-4) |
| | 16 | HSS | 0 | 1 | Slice Level of H Sync Sep. | | 0D (1) | | 5C (1) |
| | 17 | VSS | 0 | 1 | Slice Level of V Sync Sep. | 50/60Hz | 0D (0) | | 5C (0) |
| | 18 | HMS | 0 | 1 | Macro Vision C/m off/on | | 0E (0) | | 7E (0) |
| | 19 | YUV | 0 | 1 | YUV Switch Control | | 01 (0) | | 50 (0) |
| | 20 | CDV | 2 | 3 | CD mode for Video | | 0D (5-4) | | 1A1 (5-4) |
| | 21 | RON | 1 | 1 | R ON | Video only | 01 (3) | | 50 (3) |
| | 22 | GON | 1 | 1 | G ON | not memorized | 01 (2) | | 50 (2) |
| | 23 | BON | 1 | 1 | B ON | not memorized | 01 (1) | | 50 (1) |
| | 24 | PON | 1 | 1 | P ON | not memorized | 00 (7) | | 4F (7) |
| | 25 | BLK | 0 | 1 | BLK Off | | 12 (0) | | 61 (0) |
| | 26 | VMC | 0 | 1 | VM Off | | 13 (0) | | 62 (0) |
| AP | 0 | INF | 0 | 3F | Input Attenuation When surround off | | 00 (5-0) | TDA7429 | 19F (5-0) |
| | 1 | INS | 0 | 3F | Input Attenuation When surround on | | 02 | | 1A0 (5-0) |
| | 2 | PH1 | 0 | 3 | Phase 1 Register Selection | | | | 76 (1-0) |
| | 3 | PH2 | 0 | 3 | Phase 2 Register Selection | | | | 76 (3-2) |
| | 4 | PH3 | 0 | 3 | Phase 3 Register Selection | | #4 (3-0) | | 76 (5-4) |
| | 5 | PH4 | 0 | 3 | Phase 4 Register Selection | | | | 76 (7-6) |
| | 6 | BCS | 2 | 3 | Bass Center Shift | | | | 1A8 (1-0) |
| | 7 | TCS | 2 | 3 | Treble Center Shift | | #5 (3-0) | | 1A9 (1-0) |
| 8 | TRF | 2 | 3 | RF Treble Offset | #5 (3-0) | 1A9 (5-4) | | | |
| MSP | 0 | WST | 15 | FF | W/G Stereo Threshold | | | MSP3415D (84H) | 157 (7-0) |
| | 1 | WBT | EC | FF | W/G Bilingual Threshold | | | | 158 (7-0) |
| | 2 | WLL | 5 | FF | W/G Monaural Threshold | | | | 159 (7-0) |
| | 3 | WAC | 0 | 0F | W/G Agreement Count | | | | 15A (3-0) |
| | 4 | WDL | 30 | FF | W/G Search Delay | | | | 15B (7-0) |
| | 5 | NDL | 20 | FF | NICAM Search Delay | | | | 15C (7-0) |
| | 6 | SDL | 10 | FF | Stereo status Read Delay | | | | 15D (7-0) |
| | 7 | AGC | 0 | 1 | AGC Switch Auto/Constant | | BB (7) | | 108 (7) |
| | 8 | REL | 0D | 3F | AGC Gain at Constant Mode | | BB (6-1) | | 108 (6-1) |
| | 9 | CRM | 0 | 1 | Carrier muting on/off | | BB (9) | | 107 (1) |
| | 10 | ACO | 1 | 1 | Audio Clock out on/off | | 83 (5) | | 10C (5) |
| | 11 | FP | 1B | 7F | FM Prescale for non-M system | | 0E (7-0) | | 16C (6-0) |
| | 12 | FPM | 32 | 7F | FM Prescale for M system | | 0E (7-0) | | 16D (6-0) |
| | 13 | FH | 36 | 7F | FM Prescale for HDEV | | 0E (7-0) | | 16E (6-0) |
| | 14 | FHM | 65 | 7F | FM Prescale for HDEV and M | | 0E (7-0) | | 16F (6-0) |
| | 15 | WGP | 2A | 7F | W/G Prescale | | 0E (7-0) | | 170 (6-0) |
| | 16 | NIP | 6D | 7F | NICAM Prescale | | 10 (7-0) | | 138 (6-0) |
| | 17 | ERR | 50 | FF | Auto FM switch Threshold | | 21 (10-3) | | 166 (7-0) |
| 18 | VOL | 6D | FF | Loud Speaker gain 7000h to 7f0h | 0000 (15-4) | 1A7 (7-0) | | | |

Adjustment Item Table

| Device Name | Functionality | | Note | Data Range | Function | Note for Different Data | Register No. (bit) | Slava Address | RAM Address (bit) |
|-------------|---------------|------|------|------------|------------------------------|-------------------------|--------------------|---------------|-------------------|
| | No | Name | | | | | | | |
| TXT | 0 | TXH | 1 | 3 | Teletext Horizontal Position | | | (58H) | 18D (1-0) |
| | 1 | TXV | 0 | 3 | Teletext Vertical Position | | | | 18D (6-4) |
| OPM | 0 | OSH | 0A | 3F | OSD H Position | Option-Misc | | | AC (7-2) |
| | 1 | COM | 0 | 03 | Comb Selection | | | | A5 (7-6) |
| | 2 | APC | 1 | 1 | APC Switch | | | | A4 (5) |
| | 3 | TSY | 0 | 03 | TV Sys at Auto TV Sys | | | | A4 (4-3) |
| | 4 | MUT | 0 | 1 | No Signal Mute | | | | A4 (0) |
| | 5 | AFM | 1 | 1 | Auto FM switch | | | | A4 (1) |
| | 6 | RFB | 0 | 3 | C-BPF Control | | | | A5 (5-4) |
| | 7 | TV0 | 0 | 7 | Tilt to V-Angle offset | | | | A5 (2-0) |
| | 8 | DBL | 0 | 1 | Disable Blueback Function | | | | A4 (2) |
| OPB | 0 | OP1 | 0 | FF | Optional Bits 1 (see below) | Option-Bits | | | 45 |
| | 1 | OP2 | 0 | FF | Optional Bits 2 (see below) | | | | 46 |
| | 2 | OP3 | 0 | FF | Optional Bits 3 (see below) | | | | 47 |

NOTE

- shaded items are fixed data.
- Standard data listed on the Adjustment Item Table are reference values, therefore it may be different for each model and for each mode.
- Note for Different Data Those are the standard data values written on the microprocessor. Therefore, the data values of the modes and stored respectively in the memory.
In case of a device replacement, adjustment by rewriting the data value is necessary for some items.

KV-PF21M70/TF21M61/TF21M90/TF21P11
RM-952

ITEM INFORMATION.

No. OPB0 OP1

| Item | XTAL 4.43 | XTAL 3.58 | SECAM | 2nd. Lang | B/G | I | D/K | M |
|-------------------|-----------|-----------|-------|-----------|-----|---|-----|---|
| KV-PF21M70 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| KV-TF21M61 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| KV-PF21M90 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| KV-PF21P11 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |

No. OPB1 OP2

| Item | TOP | NICAM | HDEV | Thai Bil | Dis Fav. | DVD Input | AV Input | |
|-------------------|-----|-------|------|----------|----------|-----------|----------|---|
| KV-PF21M70 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| KV-TF21M61 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 |
| KV-PF21M90 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 |
| KV-PF21P11 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |

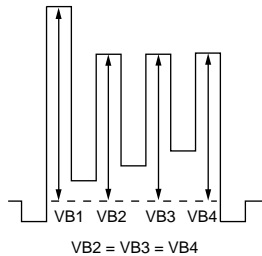
No. OPB2 OP3

| Item | Pic Rot | 2199 Curve | Auto PIC | Auto TV sys | US ST | AV Mono | 11 KEY | Color SW |
|-------------------|---------|------------|----------|-------------|-------|---------|--------|----------|
| KV-PF21M70 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KV-TF21M61 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KV-PF21M90 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KV-PF21P11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

4-3. PICTURE QUALITY ADJUSTMENTS

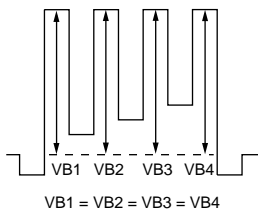
SUB COLOR ADJUSTMENT

1. Input a PAL color-bar.
2. Set to the following condition:
PICTURE 100%, BRIGHTNESS 50%, COLOR 50%
3. Connect an oscilloscope to pin ① (B OUT) of CN305, A board.
4. Set to Service Mode and select SAJ 3 'SCL' with [1] and [4] of the commander then adjust to VB2=VB3=VB4 with [3] and [6].
5. Press [MUTING] → [0] of the commander to write the data.
6. Adjust SAJ 3 'SCL' as step 2 to 5 when receiving NTSC color-bar.



SUB HUE ADJUSTMENT

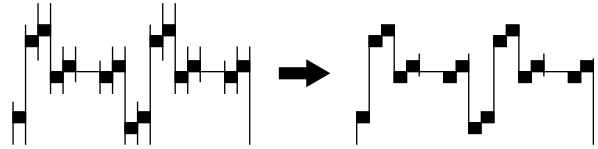
1. Select Video 1.
2. Input a NTSC color-bar, video into Video 1.
3. Set the following condition:
PICTURE 100%, BRIGHTNESS 50%, COLOR 50%
4. Connect an oscilloscope to pin ① (B OUT) of CN305, A board.
5. Select SAJ 1 'SHU' with [1] and [4] of the commander by setting to Service Mode and adjust to VB1=VB2=VB3=VB4 with [3] and [6].



6. Press [MUTING] → [0] of the commander to write the data.

BELL FILTER ADJUSTMENT

1. Input SECAM color-bar signal.
2. Connect the dual-trace oscilloscope to the pin ⑨ (R-Y) of CN303 (not mounted).
3. Adjust SERVICE MODE, ITEMS 'SBF' as shown below.



4-4. A BOARD ADJUSTMENT AFTER IC003 (MEMORY) REPLACEMENT

When replacing IC003 (MEMORY), be sure to change IC001 (μ-COM) to the following new IC at the same time.

IC001 (μ-CON) : CXP86449-623S

1. Enter to Service Mode.
2. Press commander buttons [5] and [0] (Data Initialize), and [2] and [0] (Data Copy) to initialize the data.
3. Call each item number and check if the respective screen shows the normal picture.
In cases where items are not well adjusted, rectify the items with fine adjustment.
Write the data per each item number ([MUTING] + [0]).
4. Select item numbers "OPB0" (OP1), "OPB1" (OP2) and "OPB2" (OP3) and respectively set the bit per model with command buttons [3] and [6].
5. Press commander buttons [8] and [0] (Test Normal) to return to the data that was set on the shipment from the factory.
(This will also cancel Service Mode.)

4-5. PICTURE DISTORTION ADJUSTMENT

Item Number 00 – 0B

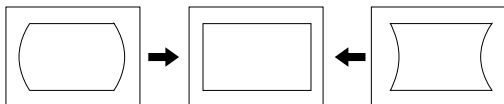
GEO 0 HSH (H POSITION)



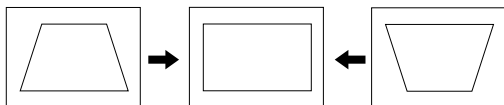
GEO 1 HSZ (H SIZE)



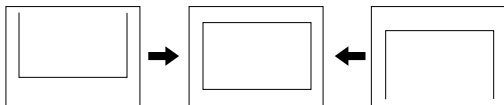
GEO 2 PAP (PIN AMP)



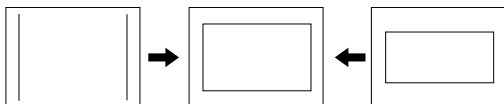
GEO 3 TILT (TRAPEZIUM)



GEO 4 VSH (V POSITION)



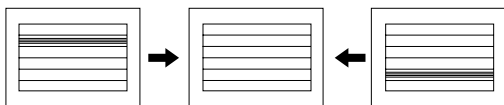
GEO 5 VSZ (V SIZE)



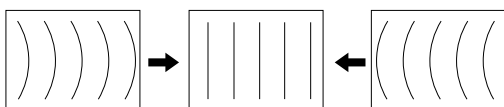
GEO 6 SCR (VERTICAL S-Correction)



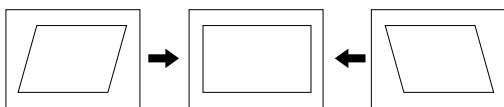
GEO 7 VLN (V LINEARITY)



GEO 8 VBOW (AFC.BOW)

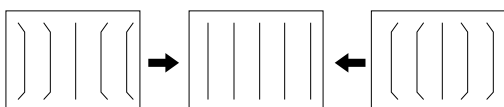


GEO 9 AGL (AFC.ANGLE)



GEO 0A UCP (UPPER CORNER PIN)

GEO 0B LCP (LOWER CORNER PIN)



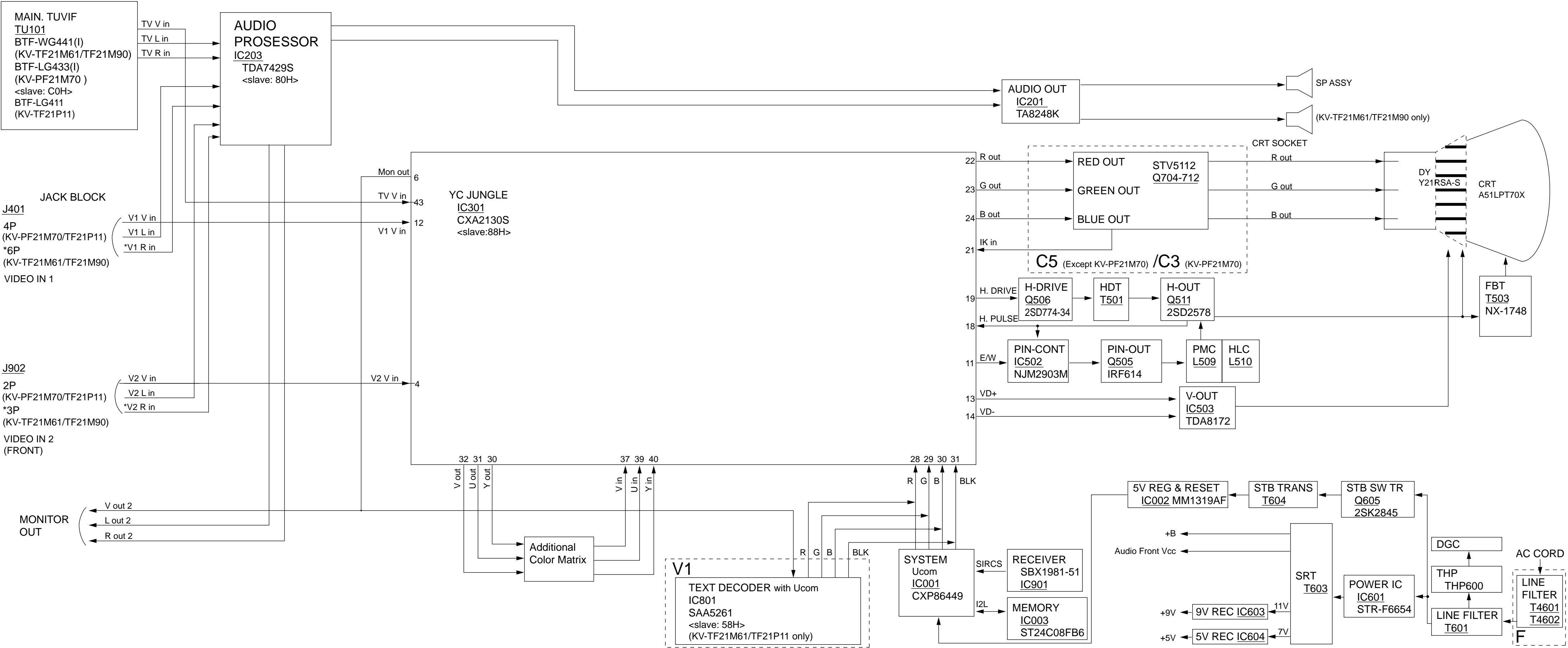
SECTION 5
DIAGRAM

KV-PF21M70/TF21M61/TF21M90/TF21P11
RM-952

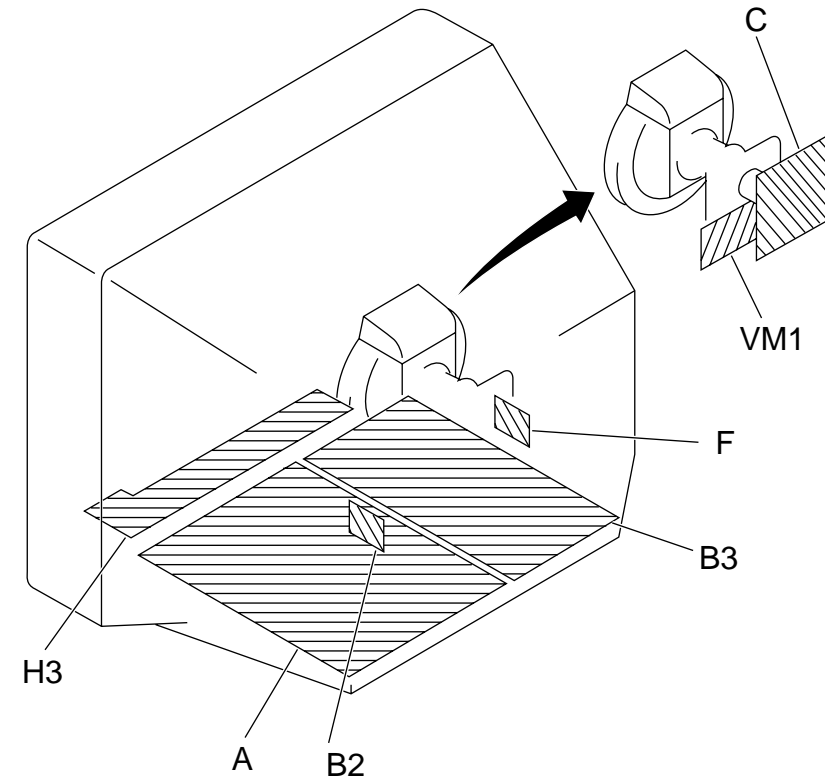
KV-PF21M70/TF21M61/TF21M90/TF21P11
RM-952

KV-PF21M70/TF21M61/TF21M90/TF21P11
RM-952

5-1. BLOCK DIAGRAM



5-3. CIRCUIT BOARDS LOCATION






5-4. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

Note:

- All capacitors are in μF unless otherwise noted.
- All electrolytic capacitors are rated at 50V unless otherwise noted.
- All resistors are in ohms.
 $k\Omega = 1000\Omega$, $M\Omega = 1000k\Omega$
- Indication of resistance which does not have rating electrical power is as follows.

| |
|--|
| Pitch: 5 mm |
| Rating electrical power 1/4W (CHIP: 1/10W) |

-  : nonflammable resistor.
-  : internal component.
-  : panel designation or adjustment for repair.
- All variable and adjustable resistors have characteristic curve B unless otherwise noted.

- Readings are taken with a color-bar signal input.

no mark : PAL

() : SECAM

[] : NTSC 3.58

« » : NTSC 4.43

- Readings are taken with a 10 M Ω digital multimeter.

- Voltage are dc with respect to ground unless otherwise noted.

- Voltage variations may be noted due to normal production tolerances.

- All voltages are in V.

- * : Cannot be measured.

- **Circled numbers are waveform references.**

- **————** :B + bus.

- ■ ■ ■ ■ :B – bus.

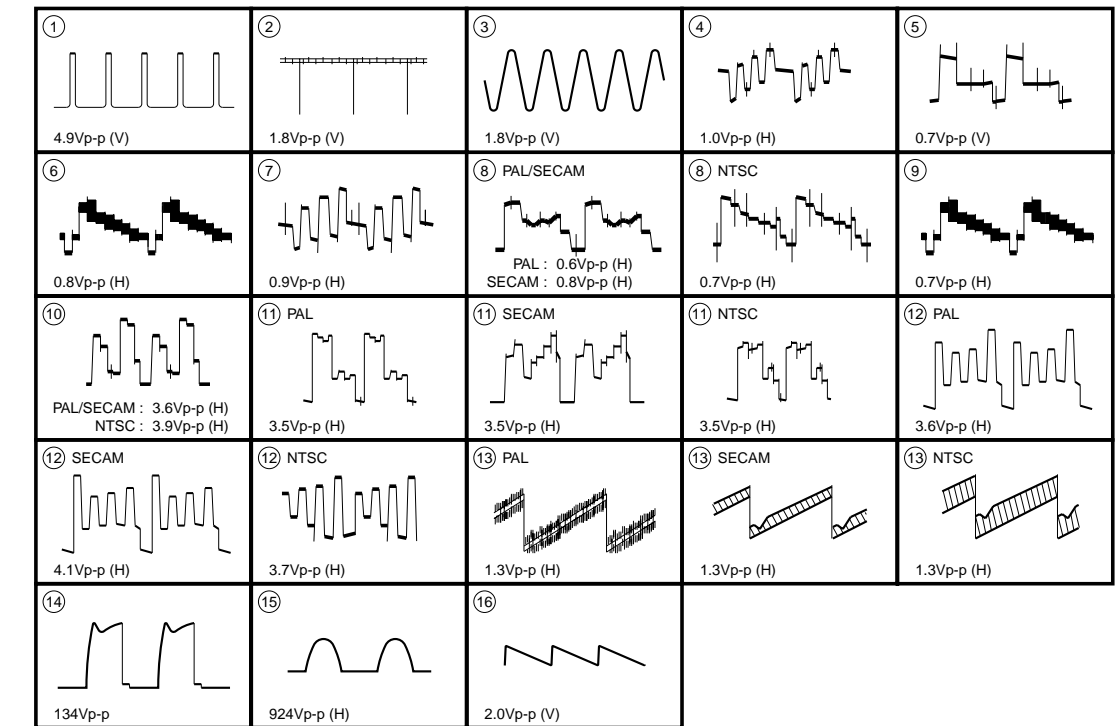
- \Rightarrow :signal path.

Reference information

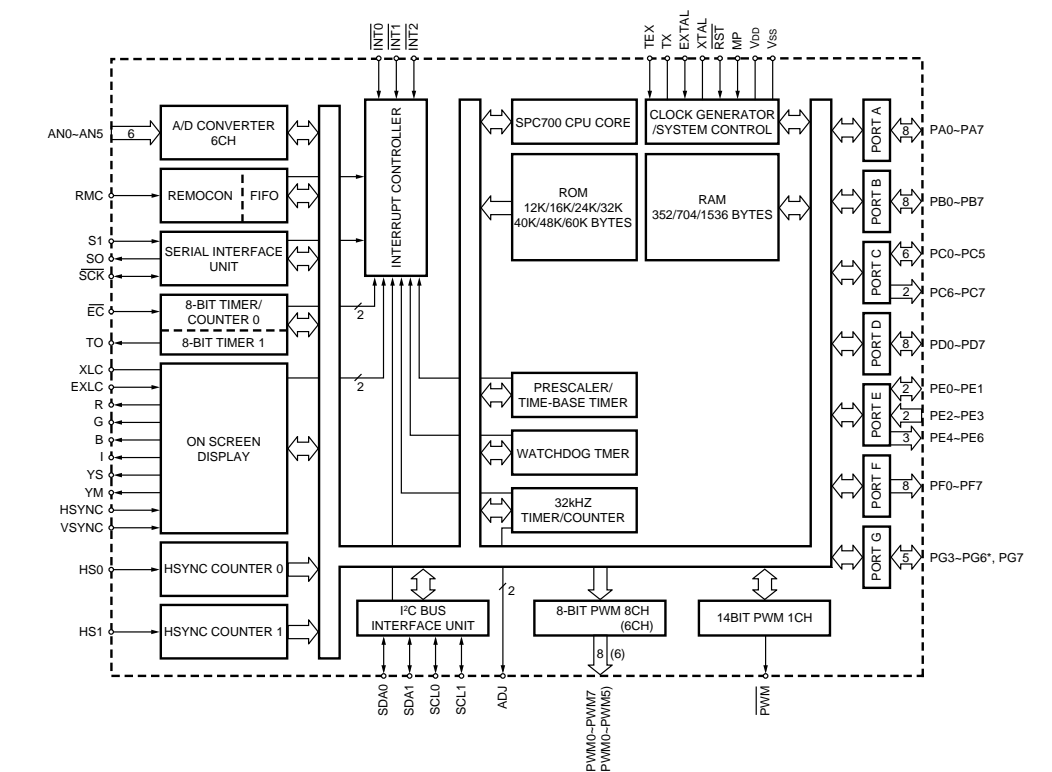
| | | |
|-----------|---------|--------------------------|
| RESISTOR | : RN | METAL FILM |
| | : RC | SOLID |
| | : FPRD | NONFLAMMABLE CARBON |
| | : FUSE | NONFLAMMABLE FUSIBLE |
| | : RS | NONFLAMMABLE METAL OXIDE |
| | : RB | NONFLAMMABLE CEMENT |
| | : RW | NONFLAMMABLE WIREWOUND |
| | : X | ADJUSTMENT RESISTOR |
| COIL | : LF-8L | MICRO INDUCTOR |
| CAPACITOR | : TA | TANTALUM |
| | : PS | STYROL |
| | : PP | POLYPROPYLENE |
| | : PT | MYLAR |
| | : MPS | METALIZED POLYESTER |
| | : MPP | METALIZED POLYPROPYLENE |
| | : ALB | BIPOLAR |
| | : ALT | HIGH TEMPERATURE |
| | : ALR | HIGH RIPPLE |

Note: The component identified by shading and mark are critical for safety. Replace only with part number specified.

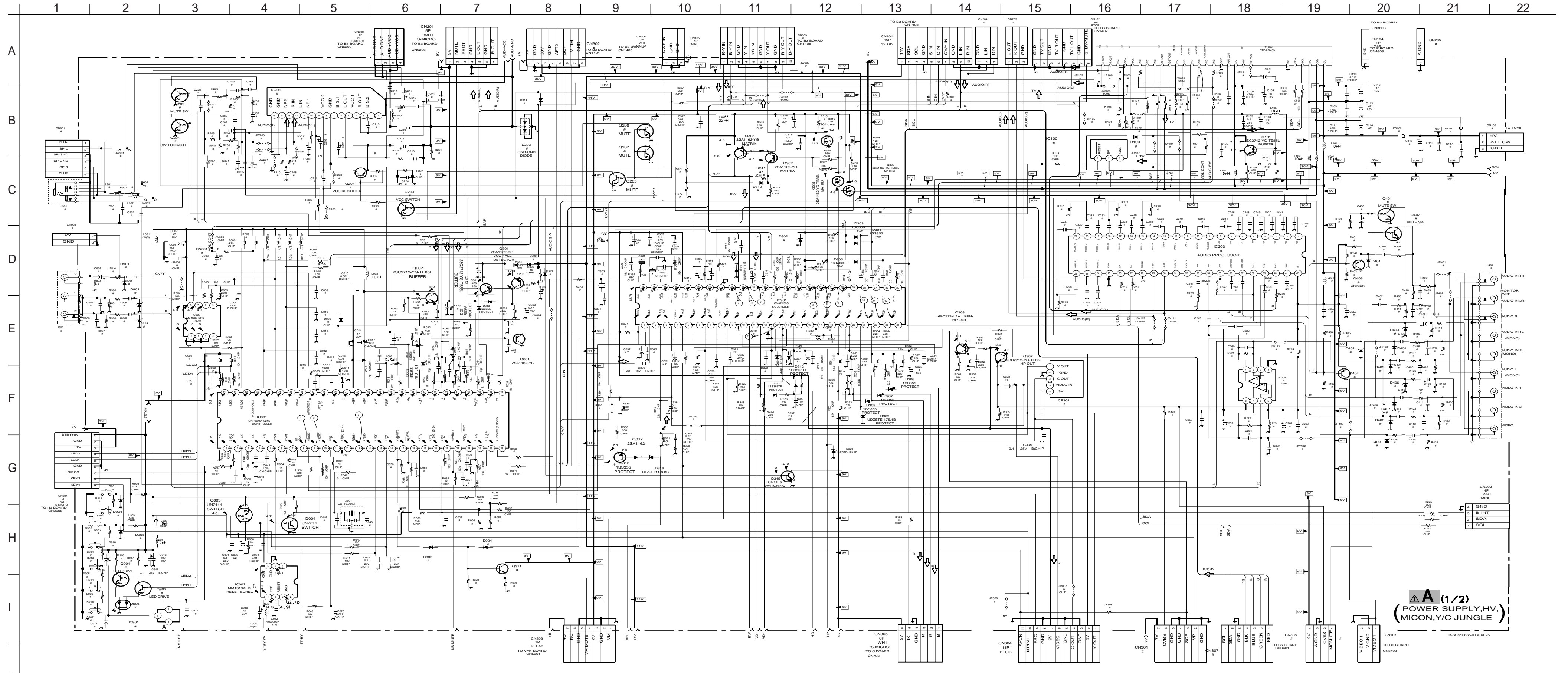
A BOARD WAVEFORMS



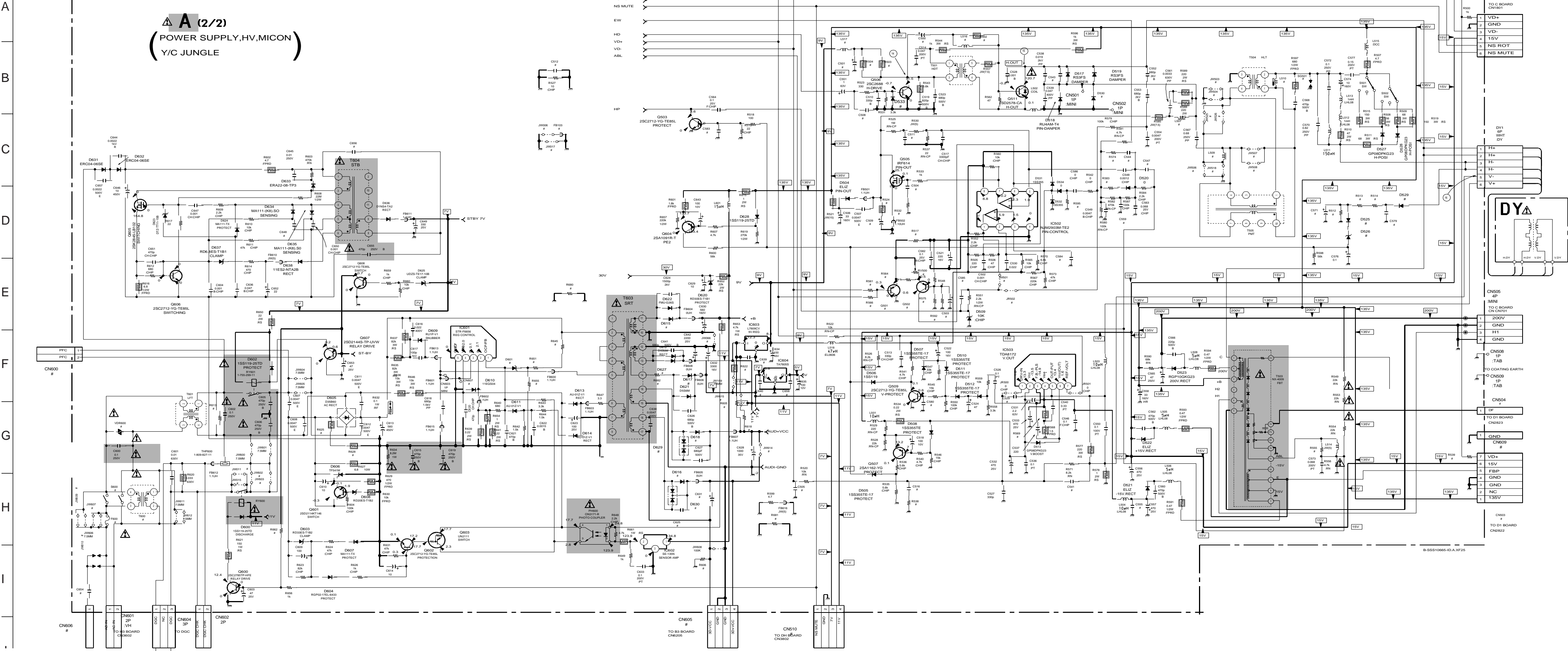
A BOARD IC001 CXP86461-621S



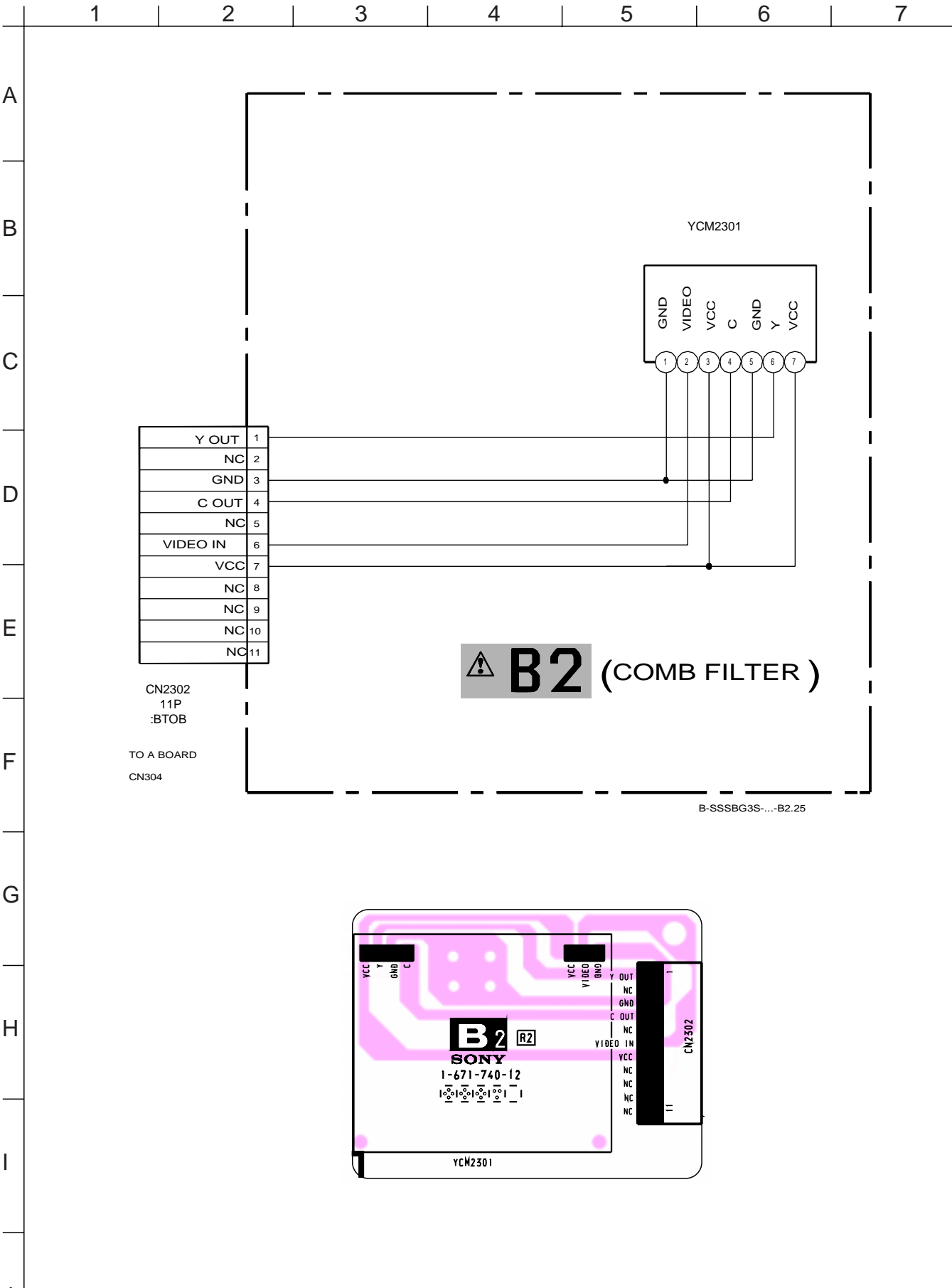
(1) Schematic Diagram of A(1/2) Board



(2) Schematic Diagram of A(2/2) Board



(3) Schematic Diagram of B2 Board



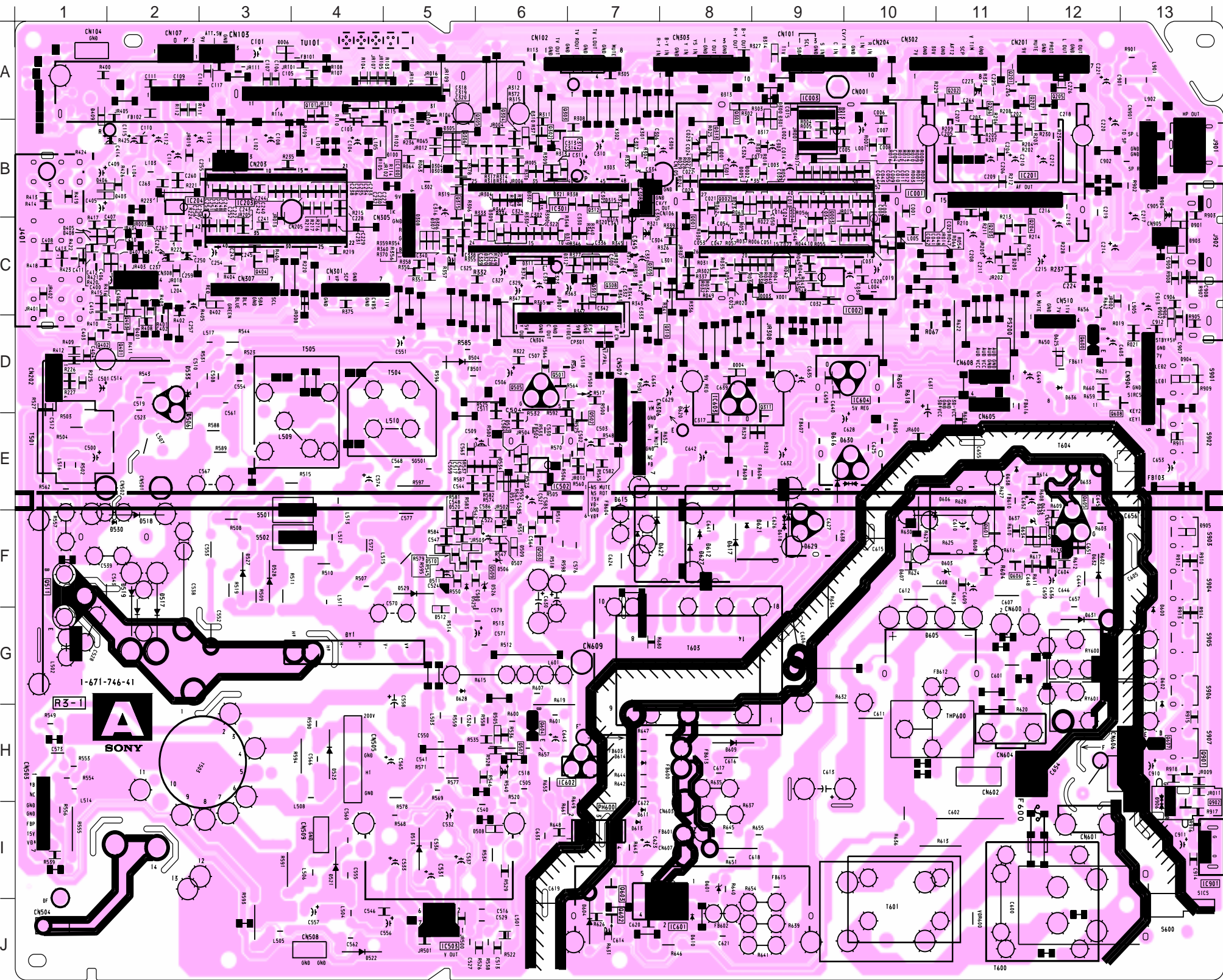
A BOARD

| IC | | D004 | D-8 | D615 | E-7 |
|------------|------|------|------|------|------|
| IC001 | B-10 | D005 | B-8 | D616 | E-9 |
| IC002 | C-10 | D006 | A-3 | D617 | F-8 |
| IC003 | A-9 | D100 | B-5 | D618 | F-9 |
| IC100 | B-5 | D203 | C-11 | D620 | D-8 |
| IC201 | B-11 | D300 | A-9 | D621 | F-9 |
| IC203 | B-3 | D301 | B-9 | D622 | F-8 |
| IC204 | B-2 | D302 | B-6 | D623 | F-12 |
| IC301 | B-6 | D303 | B-5 | D624 | E-12 |
| IC503 | J-5 | D304 | B-5 | D625 | D-12 |
| IC601 | J-8 | D305 | B-5 | D627 | F-8 |
| IC602 | H-6 | D306 | C-5 | D628 | G-5 |
| IC603 | D-8 | D307 | C-5 | D629 | F-9 |
| IC604 | D-10 | D308 | C-5 | D630 | E-10 |
| IC901 | I-13 | D309 | B-6 | D631 | G-12 |
| | | D310 | A-6 | D632 | F-12 |
| | | D311 | C-6 | D633 | E-12 |
| TRANSISTOR | | D312 | C-6 | D634 | F-11 |
| | | D313 | A-8 | D635 | E-12 |
| Q001 | C-8 | D315 | C-7 | D636 | D-12 |
| Q002 | B-8 | D316 | B-7 | D637 | F-11 |
| Q003 | C-9 | D317 | B-9 | D638 | E-11 |
| Q004 | B-9 | D314 | A-9 | D901 | C-13 |
| Q101 | A-4 | D319 | C-6 | D902 | C-13 |
| Q201 | A-11 | D320 | C-6 | D903 | C-13 |
| Q202 | A-11 | D321 | B-6 | D904 | D-13 |
| Q203 | C-11 | D401 | D-2 | D905 | F-13 |
| Q204 | C-12 | D402 | D-3 | D906 | I-13 |
| Q205 | A-12 | D403 | B-2 | | |
| Q206 | A-11 | D404 | C-2 | | |
| Q207 | A-12 | D405 | C-1 | | |
| Q301 | A-8 | D406 | B-1 | | |
| Q302 | B-6 | D407 | C-2 | | |
| Q303 | A-6 | D408 | C-1 | | |
| Q304 | A-6 | D409 | A-1 | | |
| Q305 | B-6 | D504 | D-5 | | |
| Q306 | B-5 | D505 | H-6 | | |
| Q307 | C-7 | D506 | F-6 | | |
| Q308 | C-7 | D507 | F-6 | | |
| Q309 | C-7 | D508 | I-6 | | |
| Q310 | D-8 | D509 | F-6 | | |
| Q311 | D-9 | D510 | F-5 | | |
| Q312 | B-7 | D511 | F-5 | | |
| Q313 | B-8 | D512 | G-5 | | |
| Q315 | B-5 | D513 | I-5 | | |
| Q401 | D-2 | D517 | F-2 | | |
| Q402 | D-1 | D518 | F-2 | | |
| Q403 | D-2 | D519 | F-2 | | |
| Q404 | C-3 | D520 | E-5 | | |
| Q501 | D-6 | D521 | I-4 | | |
| Q502 | E-7 | D522 | J-4 | | |
| Q503 | F-6 | D523 | H-4 | | |
| Q505 | D-6 | D525 | F-5 | | |
| Q506 | E-2 | D527 | F-3 | | |
| Q507 | H-6 | D528 | F-3 | | |
| Q509 | F-6 | D529 | F-5 | | |
| Q511 | F-1 | D530 | F-2 | | |
| Q600 | D-12 | D531 | E-6 | | |
| Q601 | F-11 | D532 | E-6 | | |
| Q602 | J-7 | D533 | D-2 | | |
| Q604 | H-6 | D534 | E-6 | | |
| Q605 | E-12 | D600 | G-13 | | |
| Q606 | F-11 | D601 | I-8 | | |
| Q607 | H-13 | D602 | G-13 | | |
| Q608 | E-12 | D603 | F-11 | | |
| Q901 | H-13 | D604 | J-7 | | |
| | | D605 | G-10 | | |
| | | D606 | E-11 | | |
| | | D607 | F-10 | | |
| DIODE | | D608 | F-11 | | |
| | | D609 | H-8 | | |
| D001 | B-8 | D611 | I-7 | | |
| D002 | C-8 | D612 | F-8 | | |
| D003 | C-9 | D613 | I-7 | | |

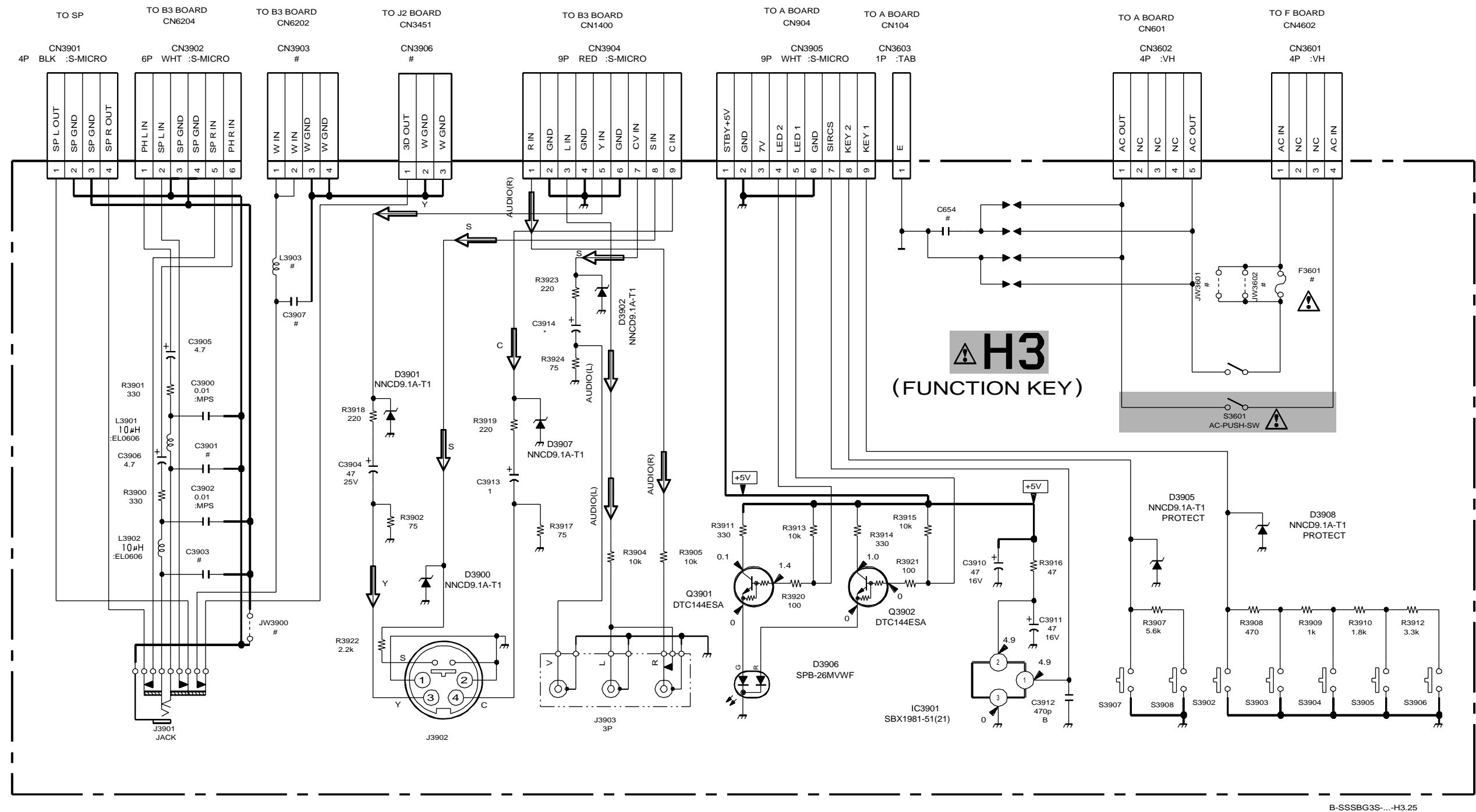
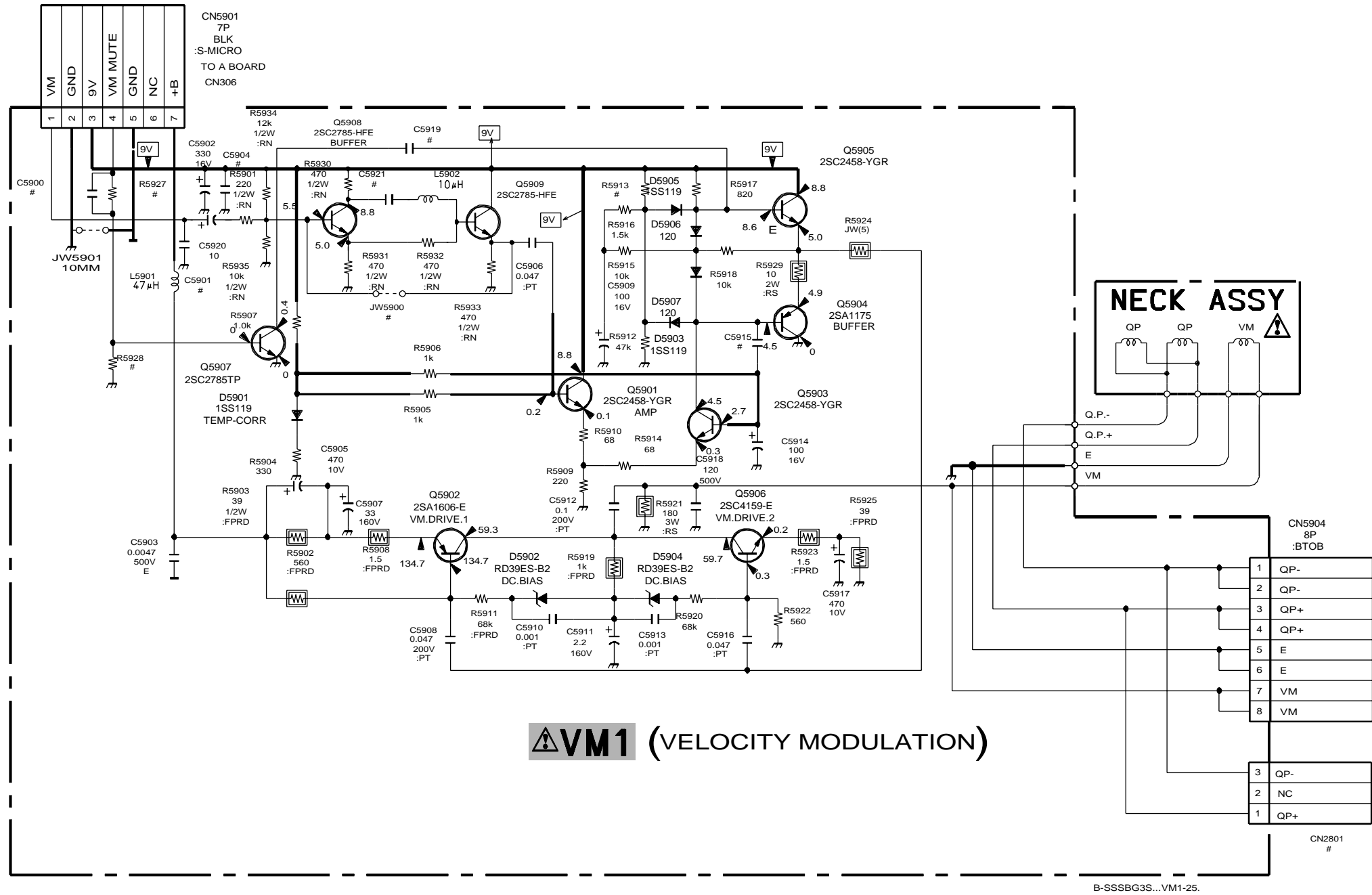
B2 [COMB FILTER] **A** [POWER SUPPLY, HV, MICON, Y/C JUNGLE]

PRINTED WIRING BOARDS

- A Board -



(4) Schematic Diagrams of H3 and VM1 Boards

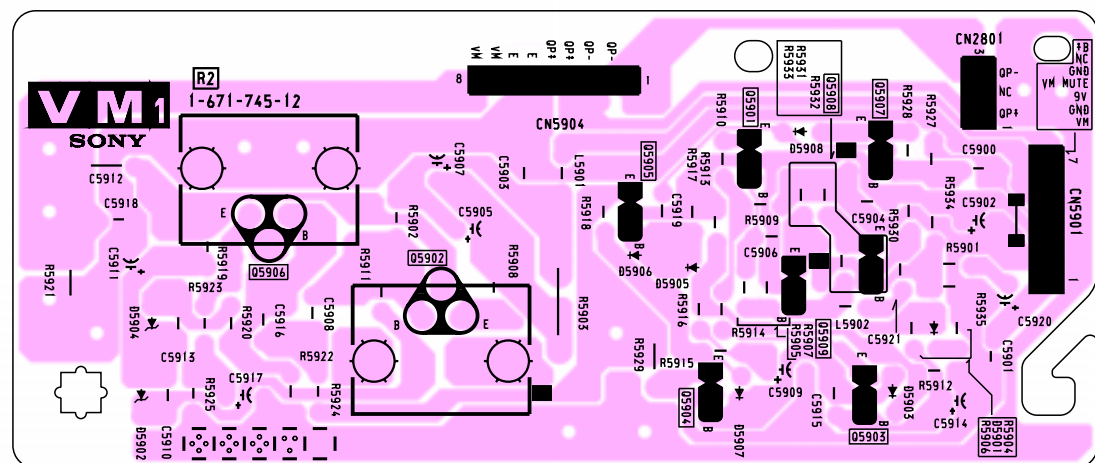


PRINTED WIRING BOARDS

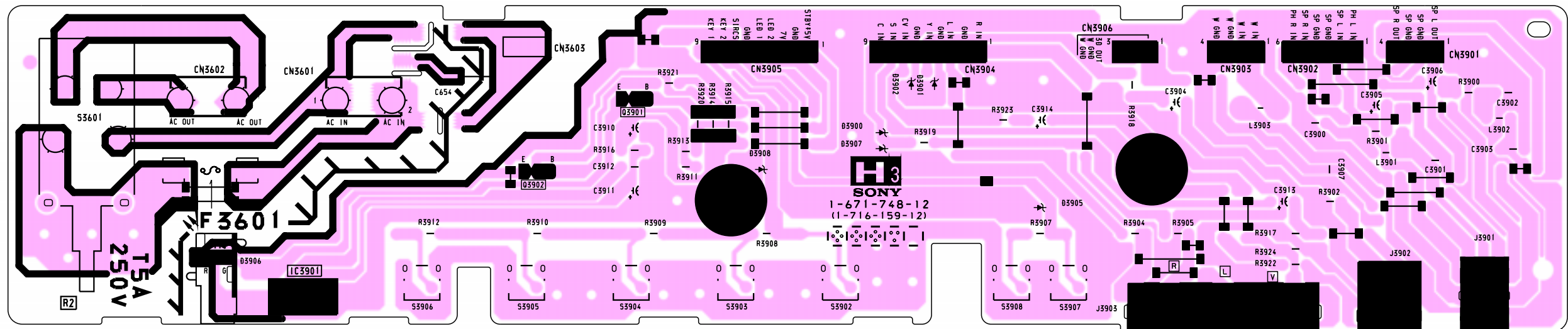
VM1 [VELOCITY MODULATION]

H3 [FUNCTION KEY]

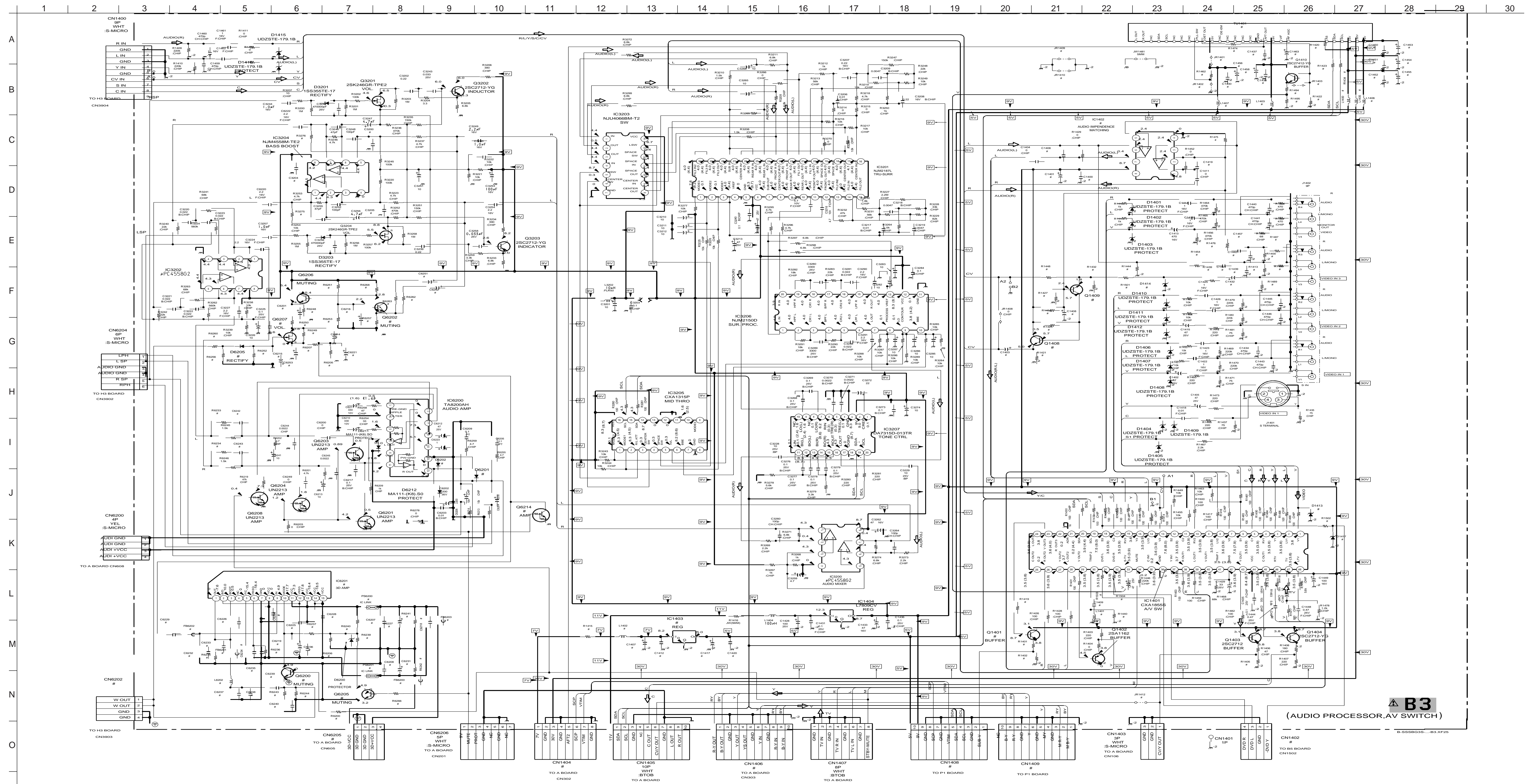
– VM1 Board –



– H3 Board –



(5) Schematic Diagram of B3 Board

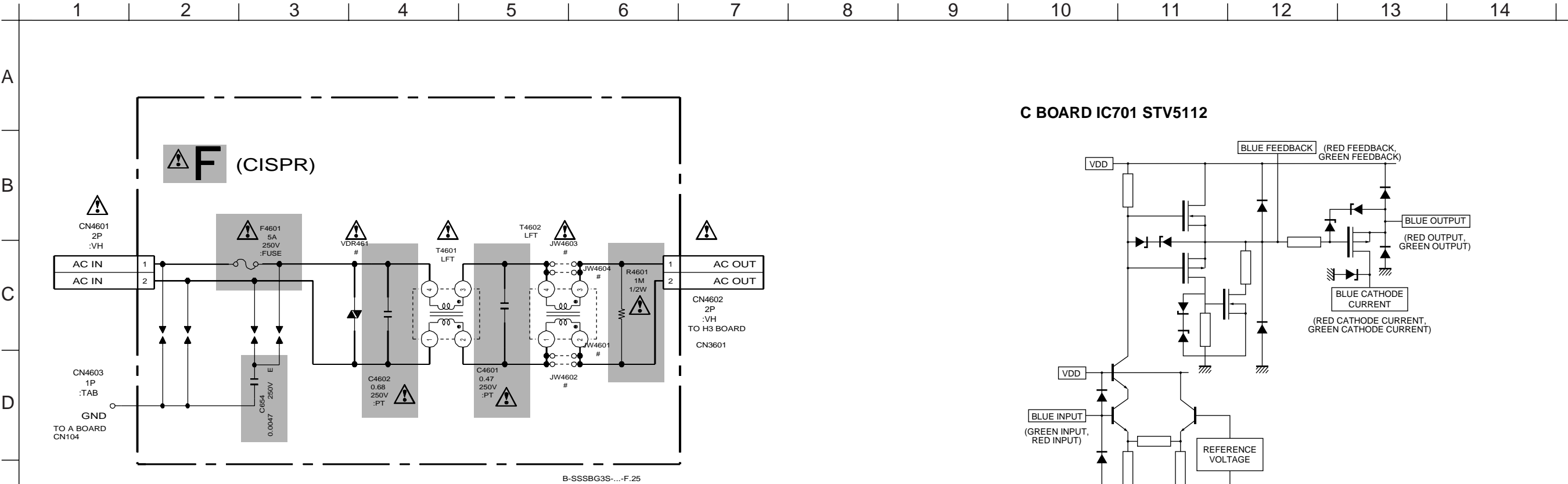


B3 [AUDIO PROSESSOR, AV SWITCH]

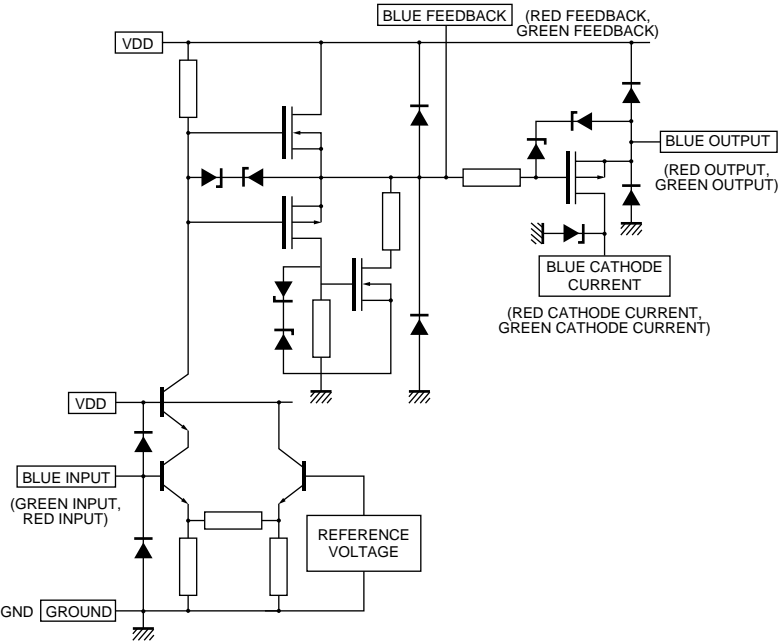
The diagram illustrates a 3D stereo processing system. It starts with two input channels, 'Lch in' and 'Rch in'. Each input passes through a gain stage (represented by a triangle) and then a cross-correlation block (represented by a circle with an 'X'). The outputs of these blocks are then processed by 'EXT FIL 1' and 'EXT FIL 2' (EXTERNAL FILTERS). The system also includes '3D-STEREO VR' blocks, which have 'TRU' and 'R' inputs. The outputs of these blocks are fed into a 'MIX' block. The final outputs, 'Lch out' and 'Rch out', are produced by a 'BYPASS' and 'TRU' control block, which can either bypass the processing or apply the 3D stereo effect.

F board ➡

(6) Schematic Diagram of F Board



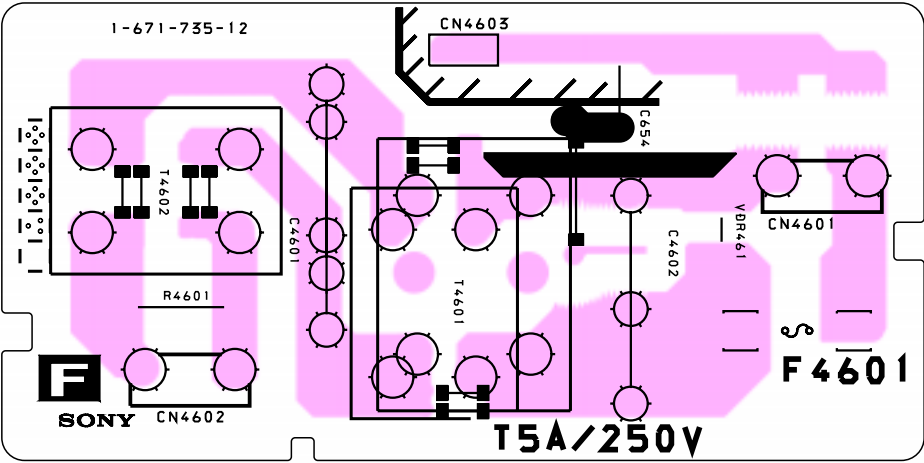
C BOARD IC701 STV5112



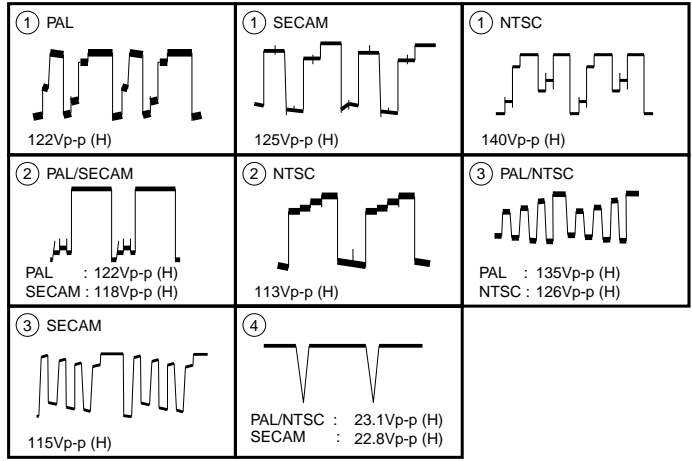
PRINTED WIRING BOARD

F [CISPR]

– F Board –



C BOARD WAVEFORMS



| | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
|--|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|



C [RGB OUT]

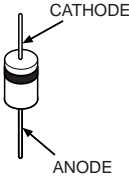


← **C** board

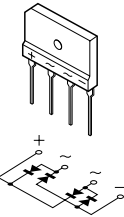
5-5. SEMICONDUCTORS

DIODE

AK04V0
AU-01Z-V1
EL1Z
GP08D
RD33EB3T
RGP02-17EL-6433



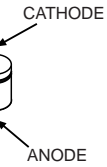
D4SB60L



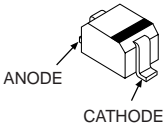
ERC04-06SE
ERC06-15S
RN4Z
31DQ06-FC5



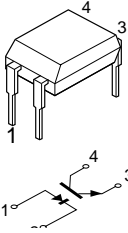
ERA22-08
ERD29-08J



MA111-TX
1SS355TE-17
DTZ-TT11-15B
RD10S-B
RD5.1SB-T2
RD9.1S-B
UDZS-TE17-6.8B



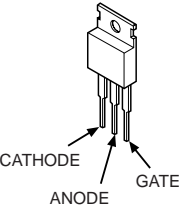
ON3171-R



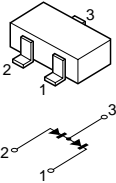
D1NS4
D1N20R
RD20ES-B2
RD30ESB2
RD6.8ES-B1
RD9.1ES-L2
1SS119-25



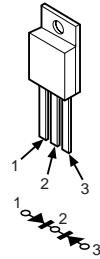
5P6M



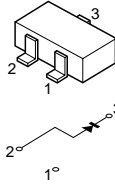
DA204K



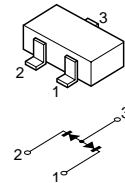
FMU-G26S



RD3.3M-B2
RD5.6M-B2

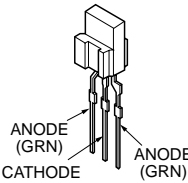


DAP202K



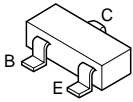
LED

SPB-26MVWF

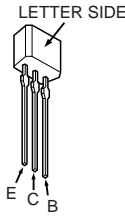


TRANSISTOR

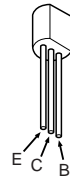
UN2111
UN2211
UN2213
DTC114EK
UN2216
2SA1162-G
2SC1623-L5L6
2SC2712-YG
2SD2114K



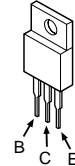
2SC2785-HFE



2SA1091-O



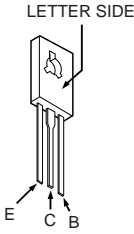
2SD2394-EF



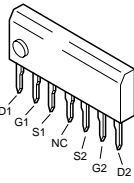
2SD2144S-UVW



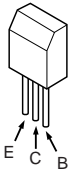
2SC2611



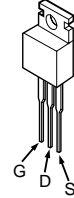
2SC4927-01



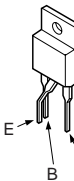
2SD774-34



RF614

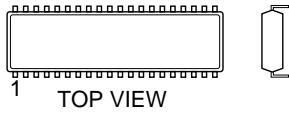


2SK2845-LB102



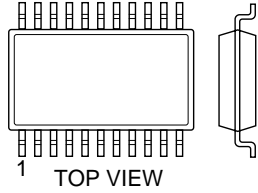
IC

CXA2130S (64PIN)
CXP86469-615S (64PIN)
SAA5261 (52PIN)
ST24C08FB6 (8PIN)
TDA7429S (42PIN)



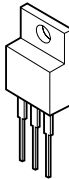
Dual In-line Package
Pin 6~98

MM1319AFBE (7PIN)
NJM2903M (8PIN)



Single In-line Package
Pin 6~98

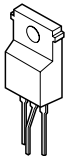
NJM78M09FA
TA7805S



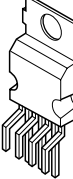
SBX1981-51



SE-135N

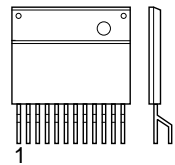


TDA8172



STR-F6654

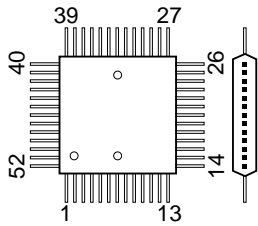
MARKING SIDE VIEW



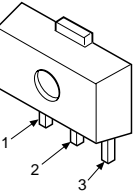
Zig-zag In-line Package
Pin 6~99

RU-1P

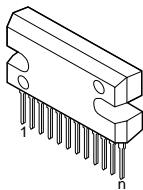
MARKING SIDE VIEW



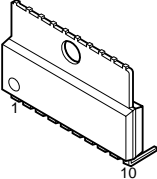
S-80743AL-A7-S



TA8248K



LA6510



SECTION 6
EXPLODED VIEWS

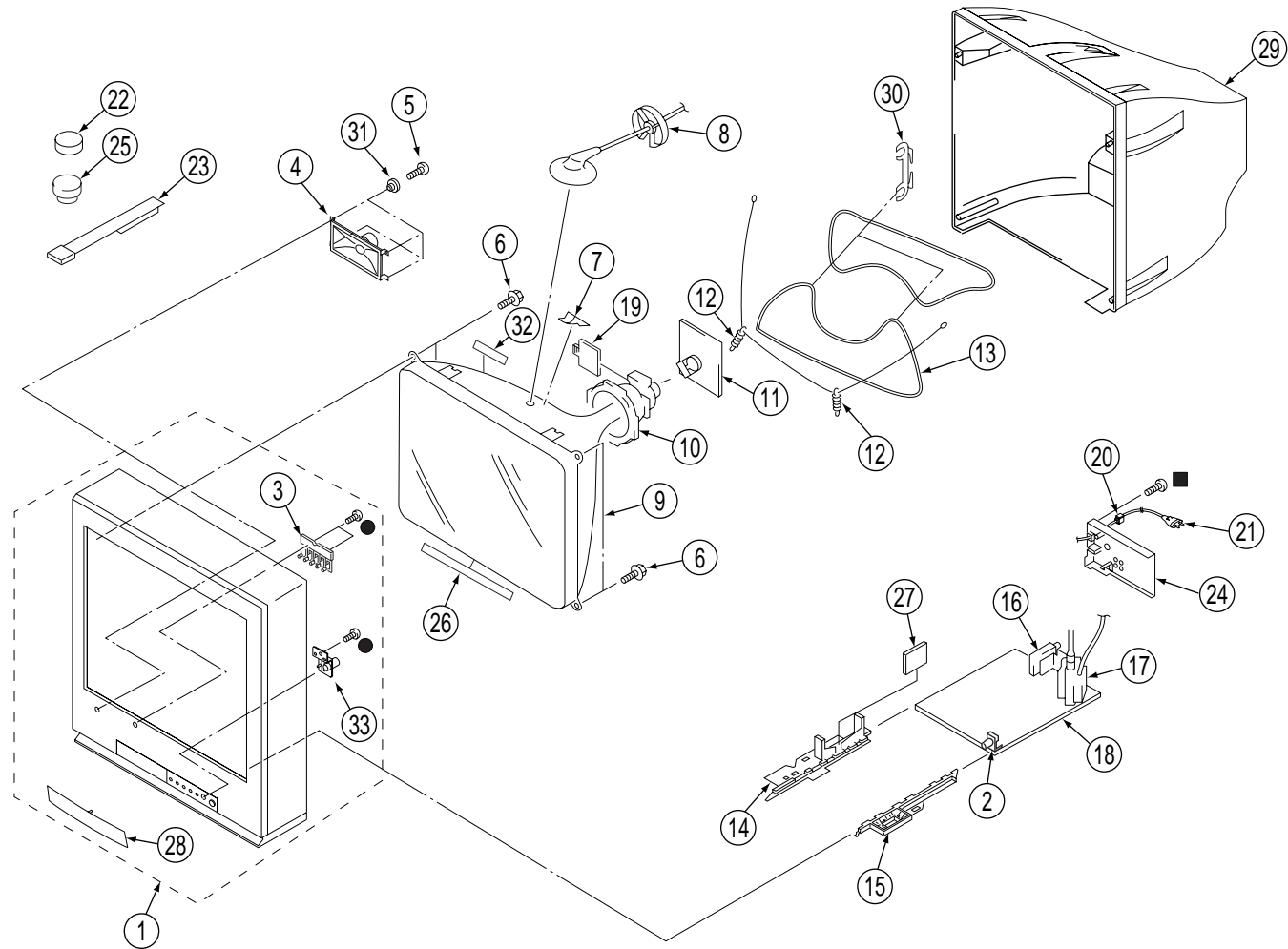
NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark \triangle are critical for safety.
Replace only with part number specified.

6-1. CHASSIS (KV-PF21M70)

- : BVTP 3 × 12 7-685-648-79
- : BVTP 4 × 16 7-685-663-71

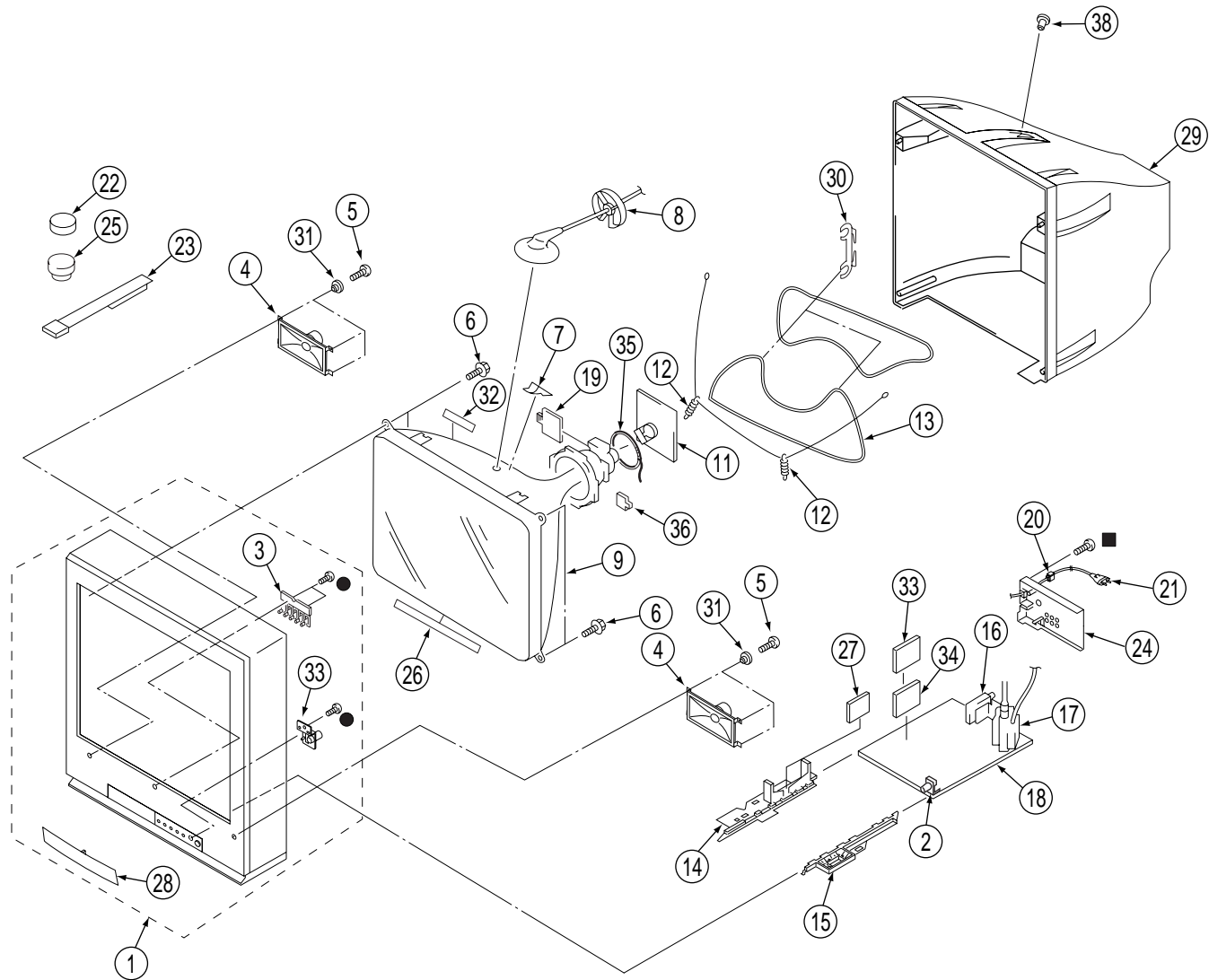


| REF. NO. | PART NO. | DESCRIPTION | REMARK |
|--------------|--------------------------|---|-----------|
| (KV-PF21M70) | | | |
| 1 | X-4036-748-1 | BEZNET ASSY | 3, 28, 33 |
| 2 | 4-070-291-01 | BUTTON, POWER | |
| 3 | 4-070-290-01 | BUTTON, MULTI | |
| 4 | 1-505-740-11 | SPEAKER (5X9CM) | |
| 5 | 4-054-981-01 | SCREW, STEP TAPPING | |
| 6 | 4-365-808-01 | SCREW (5), TAPPING | |
| 7 | 4-046-600-11 | SPACER, DY | |
| 8 | * 3-704-372-11 | HOLDER, HV CABLE | |
| 9 | \triangle 8-738-809-05 | PICTURE TUBE (A51LPT70X) | |
| 10 | 8-451-505-11 | DEFLECTION YOKE (Y21RSA-S) | |
| 11 | * A-1331-884-A | C3 BOARD, MOUNTED | |
| 12 | 4-369-318-61 | SPRING, TENSION | |
| 13 | \triangle 1-416-946-11 | COIL, DEMAGNETIC | |
| 14 | * 4-067-189-01 | PWB(L), GUIDE | |
| 15 | * 4-067-187-01 | PWB(R), GUIDE | |
| 16 | 8-598-449-01 | TUNER, FSS BTF-LG433 | |
| 17 | \triangle 1-453-293-11 | TRANSFORMER ASSY, FLYBACK (NX-1748//M3A4) | |
| 18 | * A-1298-955-A | A BOARD, COMPLETE | |
| 19 | 4-057-714-01 | PIECE ASSY, TLH CORRECTION | |
| 20 | 4-022-115-00 | HOLDER, AC CORD | |
| 21 | \triangle 1-769-609-21 | CORD, POWER (WITH CONNECTOR) | |
| 22 | 1-452-032-00 | MAGNET, DISC | |
| 23 | 4-051-736-21 | PIECE A(90), CONV. CORRECT | |
| 24 | 4-067-167-21 | BRACKET, TERMINAL | |
| 25 | 1-452-094-00 | CIRCULAR DISC MAGNET B | |
| 26 | 4-069-651-01 | BLOTTING SHEET | |
| 27 | * A-1241-355-A | F BOARD, MOUNTED | |
| 28 | X-4036-750-1 | DOOR ASSY, CONTROL | |
| 29 | \triangle 4-070-300-01 | COVER, REAR | |
| 30 | 4-064-883-11 | HOLDER, DGC | |
| 31 | * 4-379-189-12 | CUSHION, SPEAKER | |
| 32 | 4-069-652-01 | CUSHION (HS BAND) | |
| 33 | * 4-070-292-01 | BAR, OPTICAL | |

6-2. CHASSIS (KV-TF21M61/TF21M90/TF21P11)

- : BVTP 3 × 12 7-685-648-79
■: BVTP 4 × 16 7-685-663-71

NOTE: The picture tube for OCE model is upside down, and the position anode cap and tension springs are changed accordingly.



| REF. NO. | PART NO. | DESCRIPTION | REMARK |
|------------------------------|----------------|---|-----------|
| (KV-TF21M61/TF21M90/TF21P11) | | | |
| 1 | X-4036-744-1 | BEZNET ASSY (KV-TF21M61) | 3, 28, 37 |
| | X-4036-745-1 | BEZNET ASSY (KV-TF21M90) | 3, 28, 37 |
| | X-4036-744-2 | BEZNET ASSY (KV-TF21P11) | 3, 28, 37 |
| 2 | 4-070-291-01 | BUTTON, POWER | |
| 3 | 4-070-290-01 | BUTTON, MULTI | |
| 4 | 1-505-740-11 | SPEAKER (5X9CM) | |
| 5 | 4-054-981-01 | SCREW, STEP TAPPING | |
| 6 | 4-365-808-01 | SCREW (5), TAPPING | |
| 7 | 4-046-600-11 | SPACER, DY | |
| 8 | * 3-704-372-11 | HOLDER, HV CABLE | |
| 9 | △ 8-738-809-05 | PICTURE TUBE (A51LPT70X) (KV-TF21M90) | |
| | △ 8-738-812-05 | PICTURE TUBE (A51LPT70X) (EXCEPT KV-TF21M90) | |
| 10 | 8-451-505-11 | DEFLECTION YOKE (Y21RSA-S) | |
| 11 | * A-1331-941-A | C5 BOARD, MOUNTED | |
| 12 | 4-369-318-61 | SPRING, TENSION | |
| 13 | 1-416-946-11 | COIL, DEMAGNETIC | |
| 14 | * 4-067-189-01 | PWB(L), GUIDE | |
| 15 | * 4-067-187-01 | PWB(R), GUIDE | |
| 16 | 8-598-451-00 | TUNER, FSS-BTF-WG441 (EXCEPT KV-TF21P11) | |
| | 8-598-447-00 | TUNER, FSS-BTF-LG411 (KV-TF21P11) | |
| 17 | △ 1-453-293-11 | TRANSFORMER ASSY, FLYBACK (NX-1748/M3A4) | |
| 18 | * A-1298-942-A | A BOARD, COMPLETE (KV-TF21M61) | |
| | * A-1298-951-A | A BOARD, COMPLETE (KV-TF21M90) | |
| | * A-1298-968-A | A BOARD, COMPLETE (KV-TF21P11) | |
| 19 | 4-057-714-01 | PIECE ASSY, TLH CORRECTION | |
| 20 | 4-022-115-00 | HOLDER, AC CORD | |
| 21 | △ 1-574-062-11 | CORD, POWER (WITH CONNECTOR) 2.5A/250V (KV-TF21M61) | |
| | △ 1-769-609-21 | CORD, POWER (WITH CONNECTOR) (KV-TF21M90) | |
| | △ 1-574-358-11 | CORD, POWER (WITH CONNECTOR) (KV-TF21P11) | |
| 22 | 1-452-032-00 | MAGNET, DISC | |
| 23 | 4-051-736-21 | PIECE A(90), CONV. CORRECT | |
| 24 | 4-067-167-01 | BRACKET, TERMINAL | |
| 25 | 1-452-094-00 | CIRCULAR DISC MAGNET B (EXCEPT KV-TF21P11) | |
| | 1-452-014-11 | CIRCULAR DISC MAGNET B (KV-TF21P11) | |
| 26 | 4-069-651-01 | BLOTTING SHEET | |
| 27 | * A-1241-355-A | F BOARD, MOUNTED | |
| 28 | X-4036-760-1 | DOOR ASSY, CONTROL (KV-TF21M61) | |
| | X-4036-761-1 | DOOR ASSY, CONTROL (KV-TF21M90) | |
| | X-4036-760-2 | DOOR ASSY, CONTROL (KV-TF21P11) | |
| 29 | △ 4-070-300-01 | COVER, REAR | |
| 30 | 4-064-883-11 | HOLDER, DGC | |
| 31 | * 4-379-189-12 | CUSHION, SPEAKER | |
| 32 | 4-069-652-01 | CUSHION (HS BAND) | |
| 33 | * A-1347-155-A | V1 BOARD, COMPLETE (KV-TF21M61/TF21P11 ONLY) | |
| 34 | * 4-068-953-01 | BRACKET, V1 (KV-TF21M61/TF21P11 ONLY) | |
| 35 | 1-452-728-61 | COIL, NA ROTATION (RT-154) | |
| 36 | 4-034-272-11 | PLATE, CORRECTION, TLV (KV-TF21P11 ONLY) | |
| 37 | * 4-070-292-01 | BAR, OPTICAL | |
| 38 | 4-038-462-01 | CAP, ANTENNA | |

SECTION 7

ELECTRICAL PARTS LIST

A (KV-PF21M70)

NOTE:

The components identified by shading and mark \triangle are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

• Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

• All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

• All resistors are in ohms
• F : nonflammable

CAPACITORS

• MF : μ F, PF : μ μF

COILS

• MMH : mH, UH : μ H

| REF.NO. | PART NO. | DESCRIPTION | REMARK | REF.NO. | PART NO. | DESCRIPTION | REMARK |
|---------|----------------|---|-----------|---------|--------------|-----------------------|---------|
| | * A-1298-955-A | A BOARD, COMPLETE (KV-PF21M70) ***** | | C107 | 1-163-005-11 | CERAMIC CHIP 470PF | 10% 50V |
| | * 4-055-304-01 | HOLDER, LED | | C108 | 1-126-933-11 | ELECT 100MF | 20% 16V |
| | * 4-067-182-02 | HOLDER, FBT | | C109 | 1-163-005-11 | CERAMIC CHIP 470PF | 10% 50V |
| | 4-382-854-11 | SCREW (M3X10), P, SW (+) | | C110 | 1-163-005-11 | CERAMIC CHIP 470PF | 10% 50V |
| | 4-382-854-21 | SCREW (M3X14), P, SW (+) | | C111 | 1-163-005-11 | CERAMIC CHIP 470PF | 10% 50V |
| | 7-685-648-79 | SCREW +BVTP 3X12 TYPE2 IT-3 | | C112 | 1-126-933-11 | ELECT 100MF | 20% 16V |
| | | <CAPACITOR> | | C113 | 1-126-967-11 | ELECT 47MF | 20% 50V |
| C003 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V | C114 | 1-126-967-11 | ELECT 47MF | 20% 50V |
| C004 | 1-163-001-11 | CERAMIC CHIP 220PF | 10% 50V | C202 | 1-163-021-91 | CERAMIC CHIP 0.01MF | 10% 50V |
| C005 | 1-163-001-11 | CERAMIC CHIP 220PF | 10% 50V | C204 | 1-136-153-00 | FILM 0.01MF | 5% 50V |
| C006 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V | C209 | 1-104-664-11 | ELECT 47MF | 20% 16V |
| C007 | 1-126-933-11 | ELECT 100MF | 20% 16V | C210 | 1-126-933-11 | ELECT 100MF | 20% 16V |
| | | | | C211 | 1-126-941-11 | ELECT 470MF | 20% 25V |
| C008 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V | C212 | 1-126-933-11 | ELECT 100MF | 20% 16V |
| C010 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V | C215 | 1-126-942-61 | ELECT 1000MF | 20% 25V |
| C012 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V | C216 | 1-163-021-91 | CERAMIC CHIP 0.01MF | 10% 50V |
| C013 | 1-163-021-91 | CERAMIC CHIP 0.01MF | 10% 50V | C218 | 1-136-167-00 | FILM 0.15MF | 5% 50V |
| C014 | 1-126-967-11 | ELECT 47MF | 20% 50V | C220 | 1-126-942-61 | ELECT 1000MF | 20% 25V |
| C015 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% 50V | C221 | 1-126-964-11 | ELECT 10MF | 20% 50V |
| C016 | 1-163-113-00 | CERAMIC CHIP 68PF | 5% 50V | C223 | 1-126-965-11 | ELECT 22MF | 20% 50V |
| C017 | 1-163-113-00 | CERAMIC CHIP 68PF | 5% 50V | C224 | 1-163-133-00 | CERAMIC CHIP 470PF | 5% 50V |
| C019 | 1-104-665-11 | ELECT 100MF | 20% 25V | C226 | 1-109-982-11 | CERAMIC CHIP 1MF | 10% 10V |
| C022 | 1-163-227-11 | CERAMIC CHIP 10PF | 0.5PF 50V | C227 | 1-163-037-11 | CERAMIC CHIP 0.022MF | 10% 50V |
| C023 | 1-163-227-11 | CERAMIC CHIP 10PF | 0.5PF 50V | C228 | 1-163-024-00 | CERAMIC CHIP 0.018MF | 10% 50V |
| C024 | 1-163-227-11 | CERAMIC CHIP 10PF | 0.5PF 50V | C229 | 1-163-018-00 | CERAMIC CHIP 0.0056MF | 10% 50V |
| C026 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V | C230 | 1-163-024-00 | CERAMIC CHIP 0.018MF | 10% 50V |
| C027 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V | C231 | 1-163-018-00 | CERAMIC CHIP 0.0056MF | 10% 50V |
| C028 | 1-163-037-11 | CERAMIC CHIP 0.022MF | 10% 50V | C232 | 1-163-037-11 | CERAMIC CHIP 0.022MF | 10% 50V |
| C030 | 1-126-965-11 | ELECT 22MF | 20% 50V | C233 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V |
| C031 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V | C234 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V |
| C032 | 1-107-823-11 | CERAMIC CHIP 0.47MF | 10% 16V | C235 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V |
| C034 | 1-163-031-11 | CERAMIC CHIP 0.01MF | 50V | C236 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V |
| C041 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V | C238 | 1-164-505-11 | CERAMIC CHIP 2.2MF | 16V |
| C042 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V | C240 | 1-164-505-11 | CERAMIC CHIP 2.2MF | 16V |
| C043 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V | C241 | 1-164-346-11 | CERAMIC CHIP 1MF | 16V |
| C044 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V | C242 | 1-164-505-11 | CERAMIC CHIP 2.2MF | 16V |
| C047 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V | C243 | 1-216-295-91 | SHORT 0 | |
| C048 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V | C244 | 1-164-700-11 | CERAMIC CHIP 0.68MF | 16V |
| C050 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V | C245 | 1-164-346-11 | CERAMIC CHIP 1MF | 16V |
| C051 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V | C246 | 1-163-018-00 | CERAMIC CHIP 0.0056MF | 10% 50V |
| C053 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V | C248 | 1-163-010-11 | CERAMIC CHIP 0.0012MF | 10% 50V |
| C054 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V | C249 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V |
| C055 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V | C251 | 1-163-017-00 | CERAMIC CHIP 0.0047MF | 10% 50V |
| C103 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V | C252 | 1-164-346-11 | CERAMIC CHIP 1MF | 16V |
| C104 | 1-126-933-11 | ELECT 100MF | 20% 16V | C253 | 1-163-037-11 | CERAMIC CHIP 0.022MF | 10% 50V |
| | | | | C254 | 1-126-965-11 | ELECT 22MF | 20% 50V |
| | | | | C255 | 1-163-037-11 | CERAMIC CHIP 0.022MF | 10% 50V |
| | | | | C256 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V |

A (KV-PF21M70)

The components identified by shading
and mark Δ are critical for safety.
Replace only with part number specified.

| REF. NO. | PART NO. | DESCRIPTION | REMARK | REF. NO. | PART NO. | DESCRIPTION | REMARK |
|----------|--------------|--------------|---------------|---------------|--------------|--------------|--------------|
| C259 | 1-126-933-11 | ELECT | 100MF 20% | C528 | 1-162-134-11 | CERAMIC | 470PF 10% |
| C265 | 1-164-505-11 | CERAMIC CHIP | 2.2MF 16V | C530 | 1-137-372-11 | FILM | 0.022MF 5% |
| C301 | 1-126-935-11 | ELECT | 470MF 20% | C531 | 1-126-961-11 | ELECT | 2.2MF 20% |
| C302 | 1-163-005-11 | CERAMIC CHIP | 470PF 10% | C532 | 1-126-941-11 | ELECT | 470MF 20% |
| C303 | 1-126-964-11 | ELECT | 10MF 20% | C533 | 1-126-941-11 | ELECT | 470MF 20% |
| C304 | 1-126-967-11 | ELECT | 47MF 20% | C536 | 1-136-165-00 | FILM | 0.1MF 5% |
| C305 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% | C537 | 1-126-969-11 | ELECT | 220MF 20% |
| C306 | 1-163-233-11 | CERAMIC CHIP | 18PF 5% | C538 | 1-136-076-00 | FILM | 0.0085MF 3% |
| C307 | 1-163-233-11 | CERAMIC CHIP | 18PF 5% | C539 | 1-129-746-91 | FILM | 0.039MF 5% |
| C308 | 1-163-259-91 | CERAMIC CHIP | 220PF 5% | C540 | 1-136-171-00 | FILM | 0.33MF 5% |
| C309 | 1-126-957-11 | ELECT | 0.22MF 20% | C546 | 1-165-319-11 | CERAMIC CHIP | 0.1MF 50V |
| C310 | 1-126-963-11 | ELECT | 4.7MF 20% | C549 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF 10% |
| C311 | 1-126-964-11 | ELECT | 10MF 20% | C550 | 1-106-220-00 | MYLAR | 0.1MF 10% |
| C312 | 1-164-346-11 | CERAMIC CHIP | 1MF 16V | C551 | 1-126-960-11 | ELECT | 1MF 20% |
| C313 | 1-164-346-11 | CERAMIC CHIP | 1MF 16V | C552 | 1-162-116-00 | CERAMIC | 680PF 10% |
| C315 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% | C553 | 1-162-116-00 | CERAMIC | 680PF 10% |
| C316 | 1-126-967-11 | ELECT | 47MF 20% | C554 | 1-137-417-11 | MYLAR | 0.0047MF 10% |
| C317 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% | C556 | 1-126-941-11 | ELECT | 470MF 20% |
| C318 | 1-163-031-11 | CERAMIC CHIP | 0.01MF 50V | C557 | 1-126-941-11 | ELECT | 470MF 20% |
| C319 | 1-163-031-11 | CERAMIC CHIP | 0.01MF 50V | C558 | 1-123-024-21 | ELECT | 33MF 160V |
| C320 | 1-163-031-11 | CERAMIC CHIP | 0.01MF 50V | C560 | 1-102-228-00 | CERAMIC | 470PF 10% |
| C322 | 1-163-005-11 | CERAMIC CHIP | 470PF 10% | C561 | 1-136-557-11 | FILM | 0.0033MF 5% |
| C324 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF 10% | C562 | 1-102-228-00 | CERAMIC | 470PF 10% |
| C325 | 1-126-960-11 | ELECT | 1MF 20% | C564 | 1-163-038-91 | CERAMIC CHIP | 0.1MF 25V |
| C327 | 1-126-965-11 | ELECT | 22MF 20% | C565 | 1-107-655-11 | ELECT | 47MF 20% |
| C328 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% | C566 | 1-102-244-00 | CERAMIC | 220PF 10% |
| C330 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% | C567 | 1-115-521-11 | FILM | 0.82MF 5% |
| C331 | 1-247-807-31 | CARBON | 100 5% | C568 | 1-102-228-00 | CERAMIC | 470PF 10% |
| C332 | 1-126-963-11 | ELECT | 4.7MF 20% | C570 | 1-115-520-11 | FILM | 0.68MF 5% |
| C335 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% | C573 | 1-106-379-12 | MYLAR | 0.033MF 10% |
| C336 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% | C574 | 1-107-636-11 | ELECT | 10MF 20% |
| C337 | 1-126-961-11 | ELECT | 2.2MF 20% | C576 | 1-130-495-00 | MYLAR | 0.1MF 5% |
| C338 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF 10% | C577 | 1-106-395-00 | MYLAR | 0.15MF 10% |
| C341 | 1-115-340-11 | CERAMIC CHIP | 0.22MF 10% | C582 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% |
| C342 | 1-163-259-91 | CERAMIC CHIP | 220PF 5% | C600 Δ | 1-104-705-51 | FILM | 0.1MF 20% |
| C402 | 1-164-346-11 | CERAMIC CHIP | 1MF 16V | C604 | 1-163-009-11 | CERAMIC CHIP | 0.001MF 10% |
| C404 | 1-163-005-11 | CERAMIC CHIP | 470PF 10% | C605 Δ | 1-127-942-51 | CERAMIC | 330PF 10% |
| C405 | 1-126-935-11 | ELECT | 470MF 20% | C606 Δ | 1-127-942-51 | CERAMIC | 330PF 10% |
| C407 | 1-164-346-11 | CERAMIC CHIP | 1MF 16V | C607 | 1-161-830-00 | CERAMIC | 0.0047MF 99% |
| C408 | 1-163-133-00 | CERAMIC CHIP | 470PF 5% | C608 | 1-161-830-00 | CERAMIC | 0.0047MF 99% |
| C409 | 1-126-963-11 | ELECT | 4.7MF 20% | C609 | 1-126-968-11 | ELECT | 100MF 20% |
| C502 | 1-163-145-00 | CERAMIC CHIP | 0.0015MF 5% | C610 | 1-126-964-11 | ELECT | 10MF 20% |
| C506 | 1-107-638-11 | ELECT | 33MF 20% | C611 | 1-161-830-00 | CERAMIC | 0.0047MF 99% |
| C507 | 1-161-830-00 | CERAMIC | 0.0047MF 500V | C612 | 1-161-830-00 | CERAMIC | 0.0047MF 99% |
| C510 | 1-102-112-00 | CERAMIC | 330PF 10% | C613 | 1-117-752-11 | ELECT(BLOCK) | 330MF 20% |
| C512 | 1-163-989-11 | CERAMIC CHIP | 0.033MF 10% | C614 | 1-126-964-11 | ELECT | 10MF 20% |
| C513 | 1-163-263-11 | CERAMIC CHIP | 330PF 5% | C616 | 1-130-202-00 | FILM | 0.022MF 10% |
| C514 | 1-106-383-00 | MYLAR | 0.047MF 10% | C617 | 1-107-792-11 | CERAMIC | 100PF 5% |
| C517 | 1-164-182-11 | CERAMIC CHIP | 0.0033MF 10% | C618 | 1-125-893-11 | FILM | 680PF 3% |
| C518 | 1-104-665-11 | ELECT | 100MF 20% | C619 Δ | 1-119-886-51 | CERAMIC | 470PF 10% |
| C519 | 1-102-212-00 | CERAMIC | 820PF 10% | C620 | 1-163-133-00 | CERAMIC CHIP | 470PF 5% |
| C521 | 1-126-934-11 | ELECT | 220MF 20% | C621 | 1-102-114-00 | CERAMIC | 470PF 10% |
| C522 | 1-126-933-11 | ELECT | 100MF 20% | C622 | 1-102-074-00 | CERAMIC | 0.001MF 10% |
| C523 | 1-102-002-00 | CERAMIC | 680PF 10% | C623 | 1-104-665-11 | ELECT | 100MF 20% |
| C524 | 1-126-967-11 | ELECT | 47MF 20% | C624 | 1-104-331-11 | CERAMIC | 0.0022MF 10% |
| C526 | 1-130-495-00 | MYLAR | 0.1MF 5% | C627 | 1-102-002-00 | CERAMIC | 680PF 10% |
| C527 | 1-102-820-00 | CERAMIC | 330PF 5% | C628 | 1-126-942-61 | ELECT | 1000MF 20% |
| | | | | C629 | 1-126-964-11 | ELECT | 10MF 20% |

A (KV-PF21M70)

| REF. NO. | PART NO. | DESCRIPTION | | | | REMARK | REF. NO. | PART NO. | DESCRIPTION | | | | REMARK |
|-------------|----------------|-------------------------------|----------|-----|------|--------|----------|--------------|-----------------------|-----|----|-------|--------|
| C630 | 1-123-024-21 | ELECT | 33MF | | 160V | | D311 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | |
| C633 | 1-104-999-11 | MYLAR | 0.1MF | 10% | 200V | | D312 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | |
| C634 | 1-126-933-11 | ELECT | 100MF | 20% | 16V | | D313 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | |
| C635 | 1-104-665-11 | ELECT | 100MF | 20% | 10V | | D314 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | |
| C636 | 1-104-760-11 | CERAMIC CHIP | 0.047MF | 10% | 50V | | D315 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | |
| C639 | 1-164-004-11 | CERAMIC CHIP | 0.1MF | 10% | 25V | | D316 | 8-719-069-57 | DIODE UDZS-TE17-6.8B | | | | |
| C640 | 1-164-004-11 | CERAMIC CHIP | 0.1MF | 10% | 25V | | D402 | 8-719-069-60 | DIODE UDZS-TE17-9.1B | | | | |
| C641 | 1-102-002-00 | CERAMIC | 680PF | 10% | 500V | | D403 | 8-719-069-60 | DIODE UDZS-TE17-9.1B | | | | |
| C642 | 1-126-943-11 | ELECT | 2200MF | 20% | 25V | | D405 | 8-719-069-60 | DIODE UDZS-TE17-9.1B | | | | |
| C643 | 1-104-665-11 | ELECT | 100MF | 20% | 10V | | D406 | 8-719-069-60 | DIODE UDZS-TE17-9.1B | | | | |
| C644 | 1-104-331-11 | CERAMIC | 0.0022MF | 10% | 1KV | | D504 | 8-719-302-43 | DIODE EL1Z | | | | |
| C645 | 1-137-605-11 | FILM | 0.01MF | 10% | 250V | | D505 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | |
| C646 | 1-107-679-91 | ELECT | 10MF | 20% | 450V | | D506 | 8-719-911-19 | DIODE 1SS119-25 | | | | |
| C647 | 1-163-275-11 | CERAMIC CHIP | 0.001MF | 5% | 50V | | D507 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | |
| C649 | 1-126-940-11 | ELECT | 330MF | 20% | 25V | | D508 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | |
| C650 | 1-163-275-11 | CERAMIC CHIP | 0.001MF | 5% | 50V | | D509 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W | |
| C651 | 1-163-133-00 | CERAMIC CHIP | 470PF | 5% | 50V | | D510 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | |
| C652 | 1-126-965-11 | ELECT | 22MF | 20% | 50V | | D511 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | |
| C653 | 1-104-664-11 | ELECT | 47MF | 20% | 25V | | D512 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | |
| C657 | 1-101-821-00 | CERAMIC | 0.0022MF | | 500V | | D513 | 8-719-908-03 | DIODE GP08D | | | | |
| C658 | 1-164-004-11 | CERAMIC CHIP | 0.1MF | 10% | 25V | | D517 | 8-719-945-80 | DIODE ERC06-15S | | | | |
| C901 | 1-136-153-00 | FILM | 0.01MF | 5% | 50V | | D518 | 8-719-900-26 | DIODE ERD29-08J | | | | |
| C905 | 1-126-963-11 | ELECT | 4.7MF | 20% | 50V | | D521 | 8-719-302-43 | DIODE EL1Z | | | | |
| C906 | 1-164-346-11 | CERAMIC CHIP | 1MF | | 16V | | D522 | 8-719-302-43 | DIODE EL1Z | | | | |
| C907 | 1-163-133-00 | CERAMIC CHIP | 470PF | 5% | 50V | | D523 | 8-719-302-43 | DIODE EL1Z | | | | |
| C910 | 1-126-967-11 | ELECT | 47MF | 20% | 50V | | D527 | 8-719-908-03 | DIODE GP08D | | | | |
| C911 | 1-126-967-11 | ELECT | 47MF | 20% | 50V | | D528 | 8-719-908-03 | DIODE GP08D | | | | |
| C912 | 1-164-004-11 | CERAMIC CHIP | 0.1MF | 10% | 25V | | D531 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | |
| C913 | 1-126-933-11 | ELECT | 100MF | 20% | 16V | | D532 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | |
| C914 | 1-163-133-00 | CERAMIC CHIP | 470PF | 5% | 50V | | D602 | 8-719-911-19 | DIODE 1SS119-25 | | | | |
| <CONNECTOR> | | | | | | | D603 | 8-719-150-92 | DIODE RD33EB3T | | | | |
| | | | | | | | D604 | 8-719-028-72 | DIODE RGP02-17EL-6433 | | | | |
| CN104 | 1-695-915-11 | TAB (CONTACT) | | | | | D605 | 8-719-510-53 | DIODE D4SB60L | | | | |
| CN202 | * 1-785-608-11 | PIN, CONNECTOR 4P | | | | | D606 | 8-719-108-18 | THYRISTOR 5P6M | | | | |
| CN203 | * 1-564-506-11 | PLUG, CONNECTOR 3P | | | | | D607 | 8-719-404-50 | DIODE MA111-TX | | | | |
| CN204 | * 1-564-506-11 | PLUG, CONNECTOR 3P | | | | | | | | | | | |
| CN305 | * 1-564-509-11 | PLUG, CONNECTOR 6P | | | | | D608 | 8-719-110-53 | DIODE RD20ESB2 | | | | |
| CN505 | 1-508-765-00 | PIN, CONNECTOR (5MM PITCH) 3P | | | | | D609 | 8-719-311-31 | DIODE RU-1P | | | | |
| CN506 | 4-352-844-01 | PIN, LEAD, COATING | | | | | D610 | 8-719-043-76 | DIODE AK04V0 | | | | |
| CN601 | * 1-580-843-11 | PIN, CONNECTOR (POWER) | | | | | D611 | 8-719-046-74 | DIODE AU-01Z-V1 | | | | |
| CN602 | * 1-508-786-00 | PIN, CONNECTOR (5MM PITCH) 2P | | | | | D613 | 8-719-046-74 | DIODE AU-01Z-V1 | | | | |
| CN604 | * 1-573-963-11 | PIN, CONNECTOR (PC BOARD) 3P | | | | | D614 | 8-719-046-74 | DIODE AU-01Z-V1 | | | | |
| CN609 | * 1-508-784-21 | PIN, CONNECTOR (5MM PITCH) 1P | | | | | D618 | 8-719-067-18 | DIODE RN4Z | | | | |
| CN901 | * 1-564-506-11 | PLUG, CONNECTOR 3P | | | | | D620 | 8-719-110-72 | DIODE RD30ESB2 | | | | |
| <DIODE> | | | | | | | D622 | 8-719-071-39 | DIODE FMU-G26S | | | | |
| | | | | | | | D623 | 8-719-978-65 | DIODE DTZ-TT11-15B | | | | |
| D001 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | | D624 | 8-719-404-50 | DIODE MA111-TX | | | | |
| D005 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | | D625 | 8-719-977-28 | DIODE DTZ10B | | | | |
| D006 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | | D627 | 8-719-073-84 | DIODE 31DQ06-FC5 | | | | |
| D203 | 8-719-914-42 | DIODE DA204K | | | | | D628 | 8-719-911-19 | DIODE 1SS119-25 | | | | |
| D300 | 1-216-295-91 | SHORT | 0 | | | | D631 | 8-719-068-00 | DIODE ERC04-06SE | | | | |
| D301 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | | D632 | 8-719-068-00 | DIODE ERC04-06SE | | | | |
| D306 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | | D633 | 8-719-948-45 | DIODE ERA22-08 | | | | |
| D307 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | | D634 | 8-719-404-50 | DIODE MA111-TX | | | | |
| D308 | 8-719-988-61 | DIODE 1SS355TE-17 | | | | | D635 | 8-719-404-50 | DIODE MA111-TX | | | | |
| D309 | 8-719-069-54 | DIODE UDZS-TE17-5.1B | | | | | D636 | 8-719-510-02 | DIODE D1NS4 | | | | |
| | | | | | | | D637 | 8-719-109-96 | DIODE RD6.8ESB1 | | | | |
| | | | | | | | D638 | 8-719-510-48 | DIODE D1N20R | | | | |

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The components identified by shading
and mark \triangle are critical for safety.
Replace only with part number specified.

| REF. NO. | PART NO. | DESCRIPTION | REMARK | REF. NO. | PART NO. | DESCRIPTION | REMARK |
|----------|----------------|-----------------------|--------|--------------------------------|------------------------|----------------------------|--------|
| D901 | 8-719-069-60 | DIODE UDZS-TE17-9.1B | | JR009 | 1-216-295-91 | SHORT | 0 |
| D902 | 8-719-069-60 | DIODE UDZS-TE17-9.1B | | JR010 | 1-216-295-91 | SHORT | 0 |
| D904 | 8-719-069-60 | DIODE UDZS-TE17-9.1B | | JR011 | 1-216-295-91 | SHORT | 0 |
| D905 | 8-719-069-60 | DIODE UDZS-TE17-9.1B | | JR012 | 1-216-295-91 | SHORT | 0 |
| D906 | 8-719-045-19 | DIODE SPB-26MVWF | | JR013 | 1-216-295-91 | SHORT | 0 |
| | | <CONNECTOR> | | JR014 | 1-216-295-91 | SHORT | 0 |
| DY1 | * 1-580-798-11 | CONNECTOR PIN (DY) 6P | | JR015 | 1-216-295-91 | SHORT | 0 |
| | | <FERRITE BEAD> | | JR016 | 1-216-295-91 | SHORT | 0 |
| FB103 | 1-410-397-21 | FERRITE | 1.1UH | JR018 | 1-216-295-91 | SHORT | 0 |
| FB501 | 1-410-397-21 | FERRITE | 1.1UH | JR019 | 1-216-295-91 | SHORT | 0 |
| FB502 | 1-410-397-21 | FERRITE | 1.1UH | JR102 | 1-216-295-91 | SHORT | 0 |
| FB600 | 1-410-397-21 | FERRITE | 1.1UH | JR109 | 1-216-295-91 | SHORT | 0 |
| FB601 | 1-410-397-21 | FERRITE | 1.1UH | JR202 | 1-216-295-91 | SHORT | 0 |
| FB602 | 1-410-397-21 | FERRITE | 1.1UH | JR301 | 1-216-295-91 | SHORT | 0 |
| FB603 | 1-410-397-21 | FERRITE | 1.1UH | JR303 | 1-216-295-91 | SHORT | 0 |
| FB604 | 1-410-397-21 | FERRITE | 1.1UH | JR404 | 1-216-295-91 | SHORT | 0 |
| FB607 | 1-410-397-21 | FERRITE | 1.1UH | JR405 | 1-216-295-91 | SHORT | 0 |
| FB608 | 1-412-911-31 | FERRITE | 0UH | JR500 | 1-216-295-91 | SHORT | 0 |
| FB611 | 1-410-397-21 | FERRITE | 1.1UH | JR501 | 1-216-295-91 | SHORT | 0 |
| FB613 | 1-410-397-21 | FERRITE | 1.1UH | JR600 | 1-216-295-91 | SHORT | 0 |
| FB615 | 1-410-397-21 | FERRITE | 1.1UH | | | <COIL> | |
| | | <IC> | | L002 | 1-414-856-11 | INDUCTOR | 10UH |
| IC001 | 8-752-906-21 | IC CXP86449-623S | | L003 | 1-414-180-11 | INDUCTOR | 3.3UH |
| IC002 | 8-759-371-21 | IC MM1319AFBE | | L005 | 1-414-233-22 | INDUCTOR CHIP | 0UH |
| IC003 | 8-759-370-34 | IC ST24C08FB6 | | L101 | 1-414-856-11 | INDUCTOR | 10UH |
| IC201 | 8-759-339-60 | IC TA8248K | | L102 | 1-414-856-11 | INDUCTOR | 10UH |
| IC203 | 8-759-553-40 | IC TDA7429S | | L103 | 1-414-856-11 | INDUCTOR | 10UH |
| IC301 | 8-752-088-39 | IC CXA2130S | | L104 | 1-414-856-11 | INDUCTOR | 10UH |
| IC502 | 8-759-700-07 | IC NJM2903M | | L105 | 1-414-856-11 | INDUCTOR | 10UH |
| IC503 | 8-759-980-58 | IC TDA8172 | | L204 | 1-414-856-11 | INDUCTOR | 10UH |
| IC601 | 8-749-013-75 | IC STR-F6654 | | L301 | 1-414-189-31 | INDUCTOR | 100UH |
| IC602 | 8-749-920-61 | IC SE-135N | | L302 | 1-414-185-41 | INDUCTOR | 22UH |
| IC603 | 8-759-701-59 | IC NJM78M09FA | | L501 | 1-412-525-31 | INDUCTOR | 10UH |
| IC604 | 8-759-231-53 | IC TA7805S | | L502 | 1-422-613-11 | COIL, AIR CORE | |
| IC901 | 8-742-014-11 | HYB IC SBX1981-51 | | L503 | 1-412-525-31 | INDUCTOR | 10UH |
| | | <JACK> | | L504 | 1-412-525-31 | INDUCTOR | 10UH |
| J401 | 1-779-849-11 | JACK BLOCK, PIN 4P | | L505 | 1-412-525-31 | INDUCTOR | 10UH |
| J901 | 1-770-785-11 | JACK | | L506 | 1-412-525-31 | INDUCTOR | 10UH |
| J902 | 1-779-205-11 | JACK, PIN 2P | | L507 | 1-459-111-00 | INDUCTOR | 10MMH |
| | | <CHIP CONDUCTOR> | | L508 | 1-412-525-31 | INDUCTOR | 10UH |
| JR002 | 1-216-295-91 | SHORT | 0 | L509 | 1-459-390-00 | INDUCTOR | 390UH |
| JR003 | 1-216-295-91 | SHORT | 0 | L510 | 1-416-972-11 | COIL, HORIZONTAL LINEARITY | |
| JR004 | 1-216-295-91 | SHORT | 0 | L512 | 1-412-549-31 | INDUCTOR | 1MMH |
| JR005 | 1-216-295-91 | SHORT | 0 | L513 | 1-412-549-31 | INDUCTOR | 1MMH |
| JR006 | 1-216-295-91 | SHORT | 0 | L515 | 1-459-104-00 | COIL, WITH CORE | |
| JR007 | 1-216-295-91 | SHORT | 0 | L518 | 1-408-611-31 | INDUCTOR | 47UH |
| JR008 | 1-216-295-91 | SHORT | 0 | L601 | 1-412-527-11 | INDUCTOR | 15UH |
| | | | | L901 | 1-408-603-31 | INDUCTOR | 10UH |
| | | | | L905 | 1-414-856-11 | INDUCTOR | 10UH |
| | | | | | | <PHOTO COUPLER> | |
| | | | | PH600 \triangle 8-749-924-35 | PHOTO COUPLER ON3171-R | | |

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| REF. NO. | PART NO. | DESCRIPTION | REMARK | REF. NO. | PART NO. | DESCRIPTION | REMARK |
|----------|--------------|--------------------------|----------|----------|--------------|--------------------|----------|
| | | <IC LINK> | | | | | |
| PS200 | 1-532-675-21 | LINK, IC 1.5A/150V | | R013 | 1-216-065-91 | RES,CHIP 4.7K | 5% 1/10W |
| | | <TRANSISTOR> | | R014 | 1-216-025-91 | RES,CHIP 100 | 5% 1/10W |
| Q002 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | | R015 | 1-216-025-91 | RES,CHIP 100 | 5% 1/10W |
| Q003 | 8-729-424-08 | TRANSISTOR UN2111 | | R016 | 1-216-025-91 | RES,CHIP 100 | 5% 1/10W |
| Q004 | 8-729-421-22 | TRANSISTOR UN2211 | | R017 | 1-216-049-91 | RES,CHIP 1K | 5% 1/10W |
| Q101 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | | | | | |
| Q201 | 8-729-424-67 | TRANSISTOR UN2216 | | R018 | 1-216-033-00 | RES,CHIP 220 | 5% 1/10W |
| Q203 | 8-729-421-19 | TRANSISTOR UN2213 | | R019 | 1-216-073-00 | RES,CHIP 10K | 5% 1/10W |
| Q204 | 8-729-216-22 | TRANSISTOR 2SA1162-G | | R021 | 1-216-073-00 | RES,CHIP 10K | 5% 1/10W |
| Q205 | 8-729-421-19 | TRANSISTOR UN2213 | | R022 | 1-216-033-00 | RES,CHIP 220 | 5% 1/10W |
| Q206 | 8-729-421-19 | TRANSISTOR UN2213 | | R024 | 1-216-057-00 | RES,CHIP 2.2K | 5% 1/10W |
| Q207 | 8-729-421-19 | TRANSISTOR UN2213 | | | | | |
| Q301 | 8-729-216-22 | TRANSISTOR 2SA1162-G | | R025 | 1-216-057-00 | RES,CHIP 2.2K | 5% 1/10W |
| Q302 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | | R026 | 1-216-057-00 | RES,CHIP 2.2K | 5% 1/10W |
| Q303 | 8-729-216-22 | TRANSISTOR 2SA1162-G | | R027 | 1-216-073-00 | RES,CHIP 10K | 5% 1/10W |
| Q305 | 8-729-216-22 | TRANSISTOR 2SA1162-G | | R029 | 1-216-049-91 | RES,CHIP 1K | 5% 1/10W |
| Q306 | 8-729-216-22 | TRANSISTOR 2SA1162-G | | R031 | 1-216-049-91 | RES,CHIP 1K | 5% 1/10W |
| Q307 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | | | | | |
| Q308 | 8-729-216-22 | TRANSISTOR 2SA1162-G | | R035 | 1-216-025-91 | RES,CHIP 100 | 5% 1/10W |
| Q312 | 8-729-216-22 | TRANSISTOR 2SA1162-G | | R036 | 1-216-025-91 | RES,CHIP 100 | 5% 1/10W |
| Q313 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | | R037 | 1-216-025-91 | RES,CHIP 100 | 5% 1/10W |
| Q315 | 8-729-421-19 | TRANSISTOR UN2213 | | R040 | 1-216-025-91 | RES,CHIP 100 | 5% 1/10W |
| Q401 | 8-729-424-67 | TRANSISTOR UN2216 | | R041 | 1-216-025-91 | RES,CHIP 100 | 5% 1/10W |
| Q404 | 8-729-216-22 | TRANSISTOR 2SA1162-G | | | | | |
| Q503 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | | R042 | 1-216-295-91 | SHORT 0 | |
| Q505 | 8-729-931-45 | TRANSISTOR IRF614 | | R043 | 1-216-049-91 | RES,CHIP 1K | 5% 1/10W |
| Q506 | 8-729-140-96 | TRANSISTOR 2SD774-34 | | R044 | 1-216-025-91 | RES,CHIP 100 | 5% 1/10W |
| Q507 | 8-729-216-22 | TRANSISTOR 2SA1162-G | | R045 | 1-414-233-22 | INDUCTOR CHIP 0UH | |
| Q509 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | | R046 | 1-216-049-91 | RES,CHIP 1K | 5% 1/10W |
| Q511 | 8-729-048-07 | TRANSISTOR 2SD2578-CA | | | | | |
| Q601 | 8-729-023-22 | TRANSISTOR 2SD2114K | | R047 | 1-414-233-22 | INDUCTOR CHIP 0UH | |
| Q602 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | | R048 | 1-216-073-00 | RES,CHIP 10K | 5% 1/10W |
| Q603 | 8-729-424-08 | TRANSISTOR UN2111 | | R050 | 1-216-073-00 | RES,CHIP 10K | 5% 1/10W |
| Q604 | 8-729-200-17 | TRANSISTOR 2SA1091-O | | R053 | 1-216-049-91 | RES,CHIP 1K | 5% 1/10W |
| Q605 | 8-729-044-30 | TRANSISTOR 2SK2845-LB102 | | R055 | 1-216-073-00 | RES,CHIP 10K | 5% 1/10W |
| Q606 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | | | | | |
| Q607 | 8-729-922-37 | TRANSISTOR 2SD2144S-UVW | | R056 | 1-216-073-00 | RES,CHIP 10K | 5% 1/10W |
| Q608 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | | R061 | 1-216-033-00 | RES,CHIP 220 | 5% 1/10W |
| Q901 | 8-729-421-19 | TRANSISTOR UN2213 | | R062 | 1-216-041-00 | RES,CHIP 470 | 5% 1/10W |
| Q902 | 8-729-421-19 | TRANSISTOR UN2213 | | R063 | 1-216-037-00 | RES,CHIP 330 | 5% 1/10W |
| | | <RESISTOR> | | R064 | 1-216-037-00 | RES,CHIP 330 | 5% 1/10W |
| R001 | 1-414-233-22 | INDUCTOR CHIP 0UH | | R065 | 1-216-037-00 | RES,CHIP 330 | 5% 1/10W |
| R002 | 1-216-025-91 | RES,CHIP 100 | 5% 1/10W | R066 | 1-216-049-91 | RES,CHIP 1K | 5% 1/10W |
| R003 | 1-216-295-91 | SHORT 0 | | R105 | 1-216-295-91 | SHORT 0 | |
| R004 | 1-216-025-91 | RES,CHIP 100 | 5% 1/10W | R109 | 1-216-041-00 | RES,CHIP 470 | 5% 1/10W |
| R005 | 1-216-025-91 | RES,CHIP 100 | 5% 1/10W | R111 | 1-216-025-91 | RES,CHIP 100 | 5% 1/10W |
| R007 | 1-216-295-91 | SHORT 0 | | | | | |
| R008 | 1-216-065-91 | RES,CHIP 4.7K | 5% 1/10W | R112 | 1-216-025-91 | RES,CHIP 100 | 5% 1/10W |
| R010 | 1-216-065-91 | RES,CHIP 4.7K | 5% 1/10W | R113 | 1-216-047-91 | RES,CHIP 820 | 5% 1/10W |
| R011 | 1-216-065-91 | RES,CHIP 4.7K | 5% 1/10W | R202 | 1-216-071-00 | RES,CHIP 8.2K | 5% 1/10W |
| R012 | 1-216-065-91 | RES,CHIP 4.7K | 5% 1/10W | R203 | 1-216-077-00 | RES,CHIP 15K | 5% 1/10W |
| | | | | R204 | 1-216-071-00 | RES,CHIP 8.2K | 5% 1/10W |
| | | | | | | | |
| | | | | R208 | 1-216-061-00 | RES,CHIP 3.3K | 5% 1/10W |
| | | | | R210 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V |
| | | | | R211 | 1-216-043-91 | RES,CHIP 560 | 5% 1/10W |
| | | | | R212 | 1-216-033-00 | RES,CHIP 220 | 5% 1/10W |
| | | | | R213 | 1-216-073-00 | RES,CHIP 10K | 5% 1/10W |
| | | | | | | | |
| | | | | R214 | 1-216-073-00 | RES,CHIP 10K | 5% 1/10W |
| | | | | R215 | 1-216-059-00 | RES,CHIP 2.7K | 5% 1/10W |
| | | | | R216 | 1-216-059-00 | RES,CHIP 2.7K | 5% 1/10W |
| | | | | R217 | 1-216-067-00 | RES,CHIP 5.6K | 5% 1/10W |
| | | | | R218 | 1-216-067-00 | RES,CHIP 5.6K | 5% 1/10W |
| | | | | | | | |
| | | | | R219 | 1-216-025-91 | RES,CHIP 100 | 5% 1/10W |
| | | | | R220 | 1-216-025-91 | RES,CHIP 100 | 5% 1/10W |

A (KV-PF21M70)

| REF. NO. | PART NO. | DESCRIPTION | REMARK | REF. NO. | PART NO. | DESCRIPTION | REMARK |
|----------|--------------|-------------|-----------------|----------|--------------|-------------|------------------|
| R221 | 1-216-295-91 | SHORT | 0 | R367 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W |
| R225 | 1-216-033-00 | RES,CHIP | 220 5% 1/10W | R370 | 1-216-033-00 | RES,CHIP | 220 5% 1/10W |
| R226 | 1-216-033-00 | RES,CHIP | 220 5% 1/10W | R376 | 1-216-081-00 | RES,CHIP | 22K 5% 1/10W |
| R227 | 1-216-033-00 | RES,CHIP | 220 5% 1/10W | R377 | 1-216-121-91 | RES,CHIP | 1M 5% 1/10W |
| R229 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W | R378 | 1-216-031-00 | RES,CHIP | 180 5% 1/10W |
| R230 | 1-216-069-00 | RES,CHIP | 6.8K 5% 1/10W | R404 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W |
| R231 | 1-216-295-91 | SHORT | 0 | R405 | 1-216-049-91 | RES,CHIP | 1K 5% 1/10W |
| R234 | 1-249-389-11 | CARBON | 4.7 5% 1/4W | R406 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W |
| R235 | 1-216-069-00 | RES,CHIP | 6.8K 5% 1/10W | R408 | 1-216-049-91 | RES,CHIP | 1K 5% 1/10W |
| R236 | 1-216-069-00 | RES,CHIP | 6.8K 5% 1/10W | R411 | 1-216-113-00 | RES,CHIP | 470K 5% 1/10W |
| R237 | 1-216-308-00 | RES,CHIP | 4.7 5% 1/10W | R412 | 1-216-041-00 | RES,CHIP | 470 5% 1/10W |
| R301 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W | R413 | 1-216-021-00 | RES,CHIP | 68 5% 1/10W |
| R302 | 1-216-295-91 | SHORT | 0 | R414 | 1-216-113-00 | RES,CHIP | 470K 5% 1/10W |
| R303 | 1-216-049-91 | RES,CHIP | 1K 5% 1/10W | R417 | 1-216-077-00 | RES,CHIP | 15K 5% 1/10W |
| R304 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W | R418 | 1-216-113-00 | RES,CHIP | 470K 5% 1/10W |
| R305 | 1-216-051-00 | RES,CHIP | 1.2K 5% 1/10W | R419 | 1-216-022-00 | RES,CHIP | 75 5% 1/10W |
| R306 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W | R426 | 1-216-033-00 | RES,CHIP | 220 5% 1/10W |
| R307 | 1-216-295-91 | SHORT | 0 | R505 | 1-216-099-00 | RES,CHIP | 120K 5% 1/10W |
| R308 | 1-216-025-91 | RES,CHIP | 100 5% 1/10W | R506 | 1-216-085-00 | RES,CHIP | 33K 5% 1/10W |
| R309 | 1-216-025-91 | RES,CHIP | 100 5% 1/10W | R507 | 1-249-389-11 | CARBON | 4.7 5% 1/4W F |
| R310 | 1-216-025-91 | RES,CHIP | 100 5% 1/10W | R508 | 1-215-910-00 | METAL OXIDE | 68 5% 3W F |
| R311 | 1-216-017-91 | RES,CHIP | 47 5% 1/10W | R509 | 1-215-911-11 | METAL OXIDE | 100 5% 3W F |
| R312 | 1-216-041-00 | RES,CHIP | 470 5% 1/10W | R510 | 1-215-885-00 | METAL OXIDE | 68 5% 2W F |
| R313 | 1-216-053-00 | RES,CHIP | 1.5K 5% 1/10W | R511 | 1-215-911-11 | METAL OXIDE | 100 5% 3W F |
| R314 | 1-216-045-00 | RES,CHIP | 680 5% 1/10W | R516 | 1-216-081-00 | RES,CHIP | 22K 5% 1/10W |
| R316 | 1-216-053-00 | RES,CHIP | 1.5K 5% 1/10W | R518 | 1-247-807-31 | CARBON | 100 5% 1/4W |
| R317 | 1-216-077-00 | RES,CHIP | 15K 5% 1/10W | R520 | 1-215-445-00 | METAL | 10K 1% 1/4W |
| R318 | 1-216-051-00 | RES,CHIP | 1.2K 5% 1/10W | R522 | 1-216-675-11 | METAL CHIP | 10K 0.50% 1/10W |
| R319 | 1-216-025-91 | RES,CHIP | 100 5% 1/10W | R523 | 1-249-411-11 | CARBON | 330 5% 1/4W |
| R320 | 1-216-065-91 | RES,CHIP | 4.7K 5% 1/10W | R525 | 1-216-699-11 | METAL CHIP | 100K 0.50% 1/10W |
| R321 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W | R526 | 1-208-798-11 | RES,CHIP | 4.7K 0.50% 1/10W |
| R322 | 1-216-033-00 | RES,CHIP | 220 5% 1/10W | R527 | 1-216-001-00 | RES,CHIP | 10 5% 1/10W |
| R326 | 1-216-295-91 | SHORT | 0 | R528 | 1-216-683-11 | METAL CHIP | 22K 0.50% 1/10W |
| R331 | 1-216-295-91 | SHORT | 0 | R529 | 1-216-635-11 | METAL CHIP | 220 0.50% 1/10W |
| R332 | 1-216-033-00 | RES,CHIP | 220 5% 1/10W | R531 | 1-247-843-11 | CARBON | 3.3K 5% 1/4W |
| R333 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W | R533 | 1-249-417-11 | CARBON | 1K 5% 1/4W |
| R334 | 1-216-129-00 | RES,CHIP | 2.2M 5% 1/10W | R534 | 1-216-361-00 | METAL OXIDE | 0.22 5% 2W F |
| R335 | 1-216-045-00 | RES,CHIP | 680 5% 1/10W | R535 | 1-216-067-00 | RES,CHIP | 5.6K 5% 1/10W |
| R338 | 1-216-033-00 | RES,CHIP | 220 5% 1/10W | R536 | 1-216-067-00 | RES,CHIP | 5.6K 5% 1/10W |
| R340 | 1-216-025-91 | RES,CHIP | 100 5% 1/10W | R537 | 1-216-683-11 | METAL CHIP | 22K 0.50% 1/10W |
| R345 | 1-216-081-00 | RES,CHIP | 22K 5% 1/10W | R540 | 1-216-065-91 | RES,CHIP | 4.7K 5% 1/10W |
| R348 | 1-216-675-11 | METAL CHIP | 10K 0.50% 1/10W | R541 | 1-216-065-91 | RES,CHIP | 4.7K 5% 1/10W |
| R349 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W | R542 | 1-216-295-91 | SHORT | 0 |
| R350 | 1-216-061-00 | RES,CHIP | 3.3K 5% 1/10W | R543 | 1-249-426-11 | CARBON | 5.6K 5% 1/4W F |
| R351 | 1-216-053-00 | RES,CHIP | 1.5K 5% 1/10W | R545 | 1-216-077-00 | RES,CHIP | 15K 5% 1/10W |
| R354 | 1-216-057-00 | RES,CHIP | 2.2K 5% 1/10W | R546 | 1-216-077-00 | RES,CHIP | 15K 5% 1/10W |
| R355 | 1-216-057-00 | RES,CHIP | 2.2K 5% 1/10W | R547 | 1-216-085-00 | RES,CHIP | 33K 5% 1/10W |
| R356 | 1-216-057-00 | RES,CHIP | 2.2K 5% 1/10W | R549 | 1-215-451-00 | METAL | 18K 1% 1/4W |
| R357 | 1-216-079-00 | RES,CHIP | 18K 5% 1/10W | R550 | 1-216-097-91 | RES,CHIP | 100K 5% 1/10W |
| R358 | 1-216-049-91 | RES,CHIP | 1K 5% 1/10W | R551 | 1-249-421-11 | CARBON | 2.2K 5% 1/4W |
| R359 | 1-216-033-00 | RES,CHIP | 220 5% 1/10W | R552 | 1-216-057-00 | RES,CHIP | 2.2K 5% 1/10W |
| R360 | 1-216-033-00 | RES,CHIP | 220 5% 1/10W | R553 | 1-215-457-00 | METAL | 33K 1% 1/4W |
| R361 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W | R554 | 1-215-457-00 | METAL | 33K 1% 1/4W |
| R362 | 1-216-075-00 | RES,CHIP | 12K 5% 1/10W | R556 | 1-215-437-00 | METAL | 4.7K 1% 1/4W |
| R363 | 1-216-079-00 | RES,CHIP | 18K 5% 1/10W | R558 | 1-249-421-11 | CARBON | 2.2K 5% 1/4W |
| R364 | 1-216-295-91 | SHORT | 0 | R559 | 1-249-429-11 | CARBON | 10K 5% 1/4W |
| R365 | 1-216-033-00 | RES,CHIP | 220 5% 1/10W | R560 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W |
| R366 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W | | | | |

The components identified by shading
and mark \triangle are critical for safety.
Replace only with part number specified.

A (KV-PF21M70)

| REF. NO. | PART NO. | DESCRIPTION | REMARK | REF. NO. | PART NO. | DESCRIPTION | REMARK |
|------------------|--------------|-------------|------------------|---|--------------|-------------|---------------|
| R562 | 1-249-401-11 | CARBON | 47 5% 1/4W | R644 | 1-249-419-11 | CARBON | 1.5K 5% 1/4W |
| R565 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W | R646 | 1-215-924-00 | METAL OXIDE | 15K 5% 3W F |
| R567 | 1-216-105-91 | RES,CHIP | 220K 5% 1/10W | R647 | 1-249-401-11 | CARBON | 47 5% 1/4W |
| R568 | 1-249-383-11 | CARBON | 1.5 5% 1/4W F | R648 | 1-216-057-00 | RES,CHIP | 2.2K 5% 1/10W |
| R570 | 1-216-069-00 | RES,CHIP | 6.8K 5% 1/10W | R649 | 1-249-417-11 | CARBON | 1K 5% 1/4W |
| R571 | 1-215-437-00 | METAL | 4.7K 1% 1/4W | R650 | 1-215-882-00 | METAL OXIDE | 22 5% 2W F |
| R573 | 1-216-089-91 | RES,CHIP | 47K 5% 1/10W | R652 | 1-215-900-11 | METAL OXIDE | 22K 5% 2W F |
| R577 | 1-215-913-11 | METAL OXIDE | 220 5% 3W F | R653 | 1-215-873-00 | METAL OXIDE | 4.7K 5% 1W F |
| R578 | 1-216-369-00 | METAL OXIDE | 1 5% 2W F | R657 | 1-260-127-11 | CARBON | 220K 5% 1/2W |
| R579 | 1-216-097-91 | RES,CHIP | 100K 5% 1/10W | R659 | 1-216-049-91 | RES,CHIP | 1K 5% 1/10W |
| R580 | 1-216-699-11 | METAL CHIP | 100K 0.50% 1/10W | R660 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W |
| R581 | 1-208-798-11 | RES,CHIP | 4.7K 0.50% 1/10W | R661 | 1-215-873-00 | METAL OXIDE | 4.7K 5% 1W F |
| R585 | 1-249-391-11 | CARBON | 6.8 5% 1/4W F | R680 | 1-216-308-00 | RES,CHIP | 4.7 5% 1/10W |
| R588 | 1-215-888-00 | METAL OXIDE | 220 5% 2W F | R901 | 1-249-411-11 | CARBON | 330 5% 1/4W |
| R589 | 1-215-888-00 | METAL OXIDE | 220 5% 2W F | R903 | 1-216-022-00 | RES,CHIP | 75 5% 1/10W |
| R590 | 1-215-465-00 | METAL | 68K 1% 1/4W | R904 | 1-216-033-00 | RES,CHIP | 220 5% 1/10W |
| R591 | 1-260-288-11 | CARBON | 0.47 5% 1/2W F | R905 | 1-216-113-00 | RES,CHIP | 470K 5% 1/10W |
| R593 | 1-260-288-11 | CARBON | 0.47 5% 1/2W F | R906 | 1-216-077-00 | RES,CHIP | 15K 5% 1/10W |
| R594 | 1-260-288-11 | CARBON | 0.47 5% 1/2W F | R909 | 1-216-065-91 | RES,CHIP | 4.7K 5% 1/10W |
| R596 | 1-215-922-11 | METAL OXIDE | 6.8K 5% 3W F | R910 | 1-216-065-91 | RES,CHIP | 4.7K 5% 1/10W |
| R597 | 1-247-750-11 | CARBON | 680 5% 1/2W F | R911 | 1-216-067-00 | RES,CHIP | 5.6K 5% 1/10W |
| R598 | 1-249-438-11 | CARBON | 56K 5% 1/4W | R912 | 1-216-041-00 | RES,CHIP | 470 5% 1/10W |
| R599 | 1-249-389-11 | CARBON | 4.7 5% 1/4W | R913 | 1-216-049-91 | RES,CHIP | 1K 5% 1/10W |
| R600 | 1-249-438-11 | CARBON | 56K 5% 1/4W | R914 | 1-216-055-00 | RES,CHIP | 1.8K 5% 1/10W |
| R601 | 1-249-418-11 | CARBON | 1.2K 5% 1/4W F | R915 | 1-216-061-00 | RES,CHIP | 3.3K 5% 1/10W |
| R602 | 1-249-389-11 | CARBON | 4.7 5% 1/4W F | R916 | 1-216-017-91 | RES,CHIP | 47 5% 1/10W |
| R603 | 1-215-485-00 | METAL | 470K 1% 1/4W | R917 | 1-216-041-00 | RES,CHIP | 470 5% 1/10W |
| R604 | 1-216-097-91 | RES,CHIP | 100K 5% 1/10W | R918 | 1-216-041-00 | RES,CHIP | 470 5% 1/10W |
| R607 | 1-249-425-11 | CARBON | 4.7K 5% 1/4W | <RELAY> | | | |
| R608 | 1-240-205-91 | CARBON | 22M 5% 1/2W | RY601 \triangle 1-755-266-11 RELAY, AC POWER | | | |
| R609 | 1-216-057-00 | RES,CHIP | 2.2K 5% 1/10W | <SWITCH> | | | |
| R610 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W | S502 1-572-707-11 SWITCH, LEVER | | | |
| R611 | 1-216-089-91 | RES,CHIP | 47K 5% 1/10W | S600 \triangle 1-571-433-21 SWITCH, PUSH (AC POWER) | | | |
| R612 | 1-216-045-00 | RES,CHIP | 680 5% 1/10W | S901 1-692-431-21 SWITCH, TACTILE | | | |
| R614 | 1-216-041-00 | RES,CHIP | 470 5% 1/10W | S902 1-692-431-21 SWITCH, TACTILE | | | |
| R615 | 1-216-350-11 | METAL OXIDE | 1.2 5% 1W F | S903 1-692-431-21 SWITCH, TACTILE | | | |
| R616 | 1-260-302-51 | CARBON | 6.8 5% 1/2W F | S904 1-692-431-21 SWITCH, TACTILE | | | |
| R617 | 1-247-791-91 | CARBON | 22 5% 1/4W | S905 1-692-431-21 SWITCH, TACTILE | | | |
| R619 | 1-260-128-11 | CARBON | 270K 5% 1/2W | S906 1-692-431-21 SWITCH, TACTILE | | | |
| R620 | 1-215-915-11 | METAL OXIDE | 470 5% 3W F | S907 1-692-431-21 SWITCH, TACTILE | | | |
| R622 | 1-215-908-00 | METAL OXIDE | 33 5% 3W F | <TRANSFORMER> | | | |
| R623 | 1-216-095-00 | RES,CHIP | 82K 5% 1/10W | T501 1-437-195-11 TRANSFORMER, HORIZONTAL DRIVE | | | |
| R624 | 1-216-089-91 | RES,CHIP | 47K 5% 1/10W | T503 \triangle 1-453-293-11 TRANSFORMER ASSY, FLYBACK (NX-1748//M3A4) | | | |
| R626 | 1-216-049-91 | RES,CHIP | 1K 5% 1/10W | T601 1-424-682-11 TRANSFORMER, LINE FILTER | | | |
| R627 | 1-240-251-11 | CMT,MELF | 6.8 5% 10W | T603 \triangle 1-433-512-31 TRANSFORMER, CONVERTER (SRT) | | | |
| R629 | 1-247-747-11 | CARBON | 470 5% 1/2W F | T604 \triangle 1-431-852-11 TRANSFORMER, CONVERTER (SRT) | | | |
| R630 | 1-249-429-11 | CARBON | 10K 5% 1/4W F | <THERMISTOR> | | | |
| R631 | 1-216-089-91 | RES,CHIP | 47K 5% 1/10W | THP600 1-810-961-11 THERMISTOR, POSITIVE | | | |
| R632 | 1-202-933-61 | FUSIBLE | 0.1 10% 1/2W F | | | | |
| R634 \triangle | 1-218-265-91 | METAL | 8.2M 5% 1W | | | | |
| R635 | 1-216-492-11 | METAL OXIDE | 82K 5% 3W F | | | | |
| R636 | 1-215-924-00 | METAL OXIDE | 15K 5% 3W F | | | | |
| R637 | 1-216-492-11 | METAL OXIDE | 82K 5% 3W F | | | | |
| R639 | 1-216-363-00 | METAL OXIDE | 0.33 5% 2W F | | | | |
| R640 | 1-249-415-11 | CARBON | 680 5% 1/4W | | | | |
| R641 | 1-216-362-11 | METAL OXIDE | 0.27 5% 2W F | | | | |
| R642 | 1-249-419-11 | CARBON | 1.5K 5% 1/4W | | | | |
| R643 | 1-247-843-11 | CARBON | 3.3K 5% 1/4W | | | | |

A (KV-PF21M70)**A (Except KV-PF21M70)**

| REF. NO. | PART NO. | DESCRIPTION | REMARK |
|----------------|--------------------------------|----------------------|-----------|
| | | <TUNER> | |
| TU101 | 8-598-449-01 | TUNER, FSS BTF-LG433 | |
| | | <CRYSTAL> | |
| X001 | 1-579-125-11 | VIBRATOR, CERAMIC | |
| X301 | 1-781-134-21 | VIBRATOR, CRYSTAL | |
| X302 | 1-781-132-21 | VIBRATOR, CRYSTAL | |
| ***** | | | |
| * A-1298-968-A | A BOARD, COMPLETE (KV-TF21P11) | | |
| | ***** | | |
| * A-1298-942-A | A BOARD, COMPLETE (KV-TF21M61) | | |
| | ***** | | |
| * A-1298-951-A | A BOARD, COMPLETE (KV-TF21M90) | | |
| | ***** | | |
| * 4-055-304-01 | HOLDER, LED | | |
| * 4-067-182-02 | HOLDER, FBT | | |
| 4-382-854-11 | SCREW (M3X10), P, SW (+) | | |
| 4-382-854-21 | SCREW (M3X14), P, SW (+) | | |
| 7-685-648-79 | SCREW +BVTP 3X12 TYPE2 IT-3 | | |
| | | <CAPACITOR> | |
| C004 | 1-163-001-11 | CERAMIC CHIP 220PF | 10% 50V |
| C005 | 1-163-001-11 | CERAMIC CHIP 220PF | 10% 50V |
| C006 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V |
| C007 | 1-126-933-11 | ELECT 100MF | 20% 16V |
| C008 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V |
| C010 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V |
| C012 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V |
| C013 | 1-163-021-91 | CERAMIC CHIP 0.01MF | 10% 50V |
| C014 | 1-126-967-11 | ELECT 47MF | 20% 50V |
| C015 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% 50V |
| C016 | 1-163-113-00 | CERAMIC CHIP 68PF | 5% 50V |
| C017 | 1-163-113-00 | CERAMIC CHIP 68PF | 5% 50V |
| C019 | 1-104-665-11 | ELECT 100MF | 20% 25V |
| C022 | 1-163-227-11 | CERAMIC CHIP 10PF | 0.5PF 50V |
| C023 | 1-163-227-11 | CERAMIC CHIP 10PF | 0.5PF 50V |
| C024 | 1-163-227-11 | CERAMIC CHIP 10PF | 0.5PF 50V |
| C026 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V |
| C027 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V |
| C028 | 1-163-037-11 | CERAMIC CHIP 0.022MF | 10% 50V |
| C030 | 1-126-965-11 | ELECT 22MF | 20% 50V |
| C031 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V |
| C032 | 1-107-823-11 | CERAMIC CHIP 0.47MF | 10% 16V |
| C034 | 1-163-031-11 | CERAMIC CHIP 0.01MF | 50V |
| C041 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V |
| C042 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V |
| C043 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V |
| C044 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V |
| C047 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V |
| C048 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V |
| C050 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V |

| REF. NO. | PART NO. | DESCRIPTION | REMARK |
|----------|--------------|-----------------------|-----------------------------------|
| C051 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V |
| C053 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V |
| C054 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V |
| C055 | 1-163-251-11 | CERAMIC CHIP 100PF | 5% 50V |
| C103 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V |
| C104 | 1-126-933-11 | ELECT 100MF | 20% 16V |
| C107 | 1-163-005-11 | CERAMIC CHIP 470PF | 10% 50V |
| C108 | 1-126-933-11 | ELECT 100MF | 20% 16V |
| C109 | 1-163-005-11 | CERAMIC CHIP 470PF | 10% 50V |
| C110 | 1-163-005-11 | CERAMIC CHIP 470PF | 10% 50V |
| C111 | 1-163-005-11 | CERAMIC CHIP 470PF | 10% 50V |
| C112 | 1-126-933-11 | ELECT 100MF | 20% 16V |
| C113 | 1-126-967-11 | ELECT 47MF | 20% 50V |
| C114 | 1-126-967-11 | ELECT 47MF | 20% 50V |
| C202 | 1-163-016-00 | CERAMIC CHIP 0.0039MF | 10% 50V |
| C203 | 1-163-016-00 | CERAMIC CHIP 0.0039MF | 10% 50V |
| C204 | 1-136-155-00 | FILM 0.015MF | 5% 50V |
| C207 | 1-136-155-00 | FILM 0.015MF | 5% 50V |
| C208 | 1-104-664-11 | ELECT 47MF | 20% 16V |
| C209 | 1-104-664-11 | ELECT 47MF | 20% 16V |
| C210 | 1-126-933-11 | ELECT 100MF | 20% 16V |
| C211 | 1-126-941-11 | ELECT 470MF | 20% 25V |
| C212 | 1-126-933-11 | ELECT 100MF | 20% 16V |
| C213 | 1-126-933-11 | ELECT 100MF | 20% 16V |
| C214 | 1-126-942-61 | ELECT 1000MF | 20% 25V |
| C215 | 1-126-942-61 | ELECT 1000MF | 20% 25V |
| C216 | 1-163-021-91 | CERAMIC CHIP 0.01MF | 10% 50V |
| C217 | 1-126-964-11 | ELECT 10MF | 20% 50V |
| C218 | 1-136-167-00 | FILM 0.15MF | 5% 50V |
| C219 | 1-136-167-00 | FILM 0.15MF | 5% 50V |
| C220 | 1-126-942-61 | ELECT 1000MF | 20% 25V |
| C221 | 1-126-964-11 | ELECT 10MF | 20% 50V |
| C223 | 1-126-965-11 | ELECT 22MF | 20% 50V |
| C224 | 1-163-133-00 | CERAMIC CHIP 470PF | 5% 50V |
| C225 | 1-109-982-11 | CERAMIC CHIP 1MF | 10% 10V (KV-TF21M61/TF21M90 ONLY) |
| C226 | 1-109-982-11 | CERAMIC CHIP 1MF | 10% 10V |
| C227 | 1-163-037-11 | CERAMIC CHIP 0.022MF | 10% 50V |
| C228 | 1-163-024-00 | CERAMIC CHIP 0.018MF | 10% 50V |
| C229 | 1-163-018-00 | CERAMIC CHIP 0.0056MF | 10% 50V |
| C230 | 1-163-024-00 | CERAMIC CHIP 0.018MF | 10% 50V |
| C231 | 1-163-018-00 | CERAMIC CHIP 0.0056MF | 10% 50V |
| C232 | 1-163-037-11 | CERAMIC CHIP 0.022MF | 10% 50V |
| C233 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V |
| C234 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V |
| C235 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V |
| C236 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% 25V |
| C238 | 1-164-505-11 | CERAMIC CHIP 2.2MF | 16V |
| C240 | 1-164-505-11 | CERAMIC CHIP 2.2MF | 16V |
| C241 | 1-164-346-11 | CERAMIC CHIP 1MF | 16V |
| C242 | 1-164-505-11 | CERAMIC CHIP 2.2MF | 16V |
| C243 | 1-216-295-91 | SHORT 0 | |
| C244 | 1-164-700-11 | CERAMIC CHIP 0.68MF | 16V |
| C245 | 1-164-346-11 | CERAMIC CHIP 1MF | 16V |
| C246 | 1-163-018-00 | CERAMIC CHIP 0.0056MF | 10% 50V |
| C247 | 1-164-346-11 | CERAMIC CHIP 1MF | 16V (KV-TF21M61/TF21M90 ONLY) |

The components identified by shading
and mark \triangle are critical for safety.
Replace only with part number specified.

A (Except KV-PF21M70)

| REF. NO. | PART NO. | DESCRIPTION | REMARK | REF. NO. | PART NO. | DESCRIPTION | REMARK |
|----------|--------------|--------------|---|------------------|--------------|-------------------|--|
| C248 | 1-163-010-11 | CERAMIC CHIP | 0.0012MF 10% 50V | C409 | 1-126-963-11 | ELECT | 4.7MF 20% 50V |
| C249 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% 25V | C415 | 1-163-133-00 | CERAMIC CHIP | 470PF 5% 50V (KV- TF21M61/TF21M90 ONLY) |
| C250 | 1-216-295-91 | SHORT | 0 (KV-TF21M61/TF21M90 ONLY) | C502 | 1-163-145-00 | CERAMIC CHIP | 0.0015MF 5% 50V |
| C251 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF 10% 50V | C506 | 1-107-638-11 | ELECT | 33MF 20% 160V |
| C252 | 1-164-346-11 | CERAMIC CHIP | 1MF 16V | C507 | 1-161-830-00 | CERAMIC | 0.0047MF 500V |
| C253 | 1-163-037-11 | CERAMIC CHIP | 0.022MF 10% 50V | C510 | 1-102-112-00 | CERAMIC | 330PF 10% 50V |
| C254 | 1-126-965-11 | ELECT | 22MF 20% 50V | C512 | 1-163-989-11 | CERAMIC CHIP | 0.033MF 10% 25V |
| C255 | 1-163-037-11 | CERAMIC CHIP | 0.022MF 10% 50V | C513 | 1-163-263-11 | CERAMIC CHIP | 330PF 5% 50V |
| C256 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% 25V | C514 | 1-106-383-00 | MYLAR | 0.047MF 10% 200V |
| C259 | 1-126-933-11 | ELECT | 100MF 20% 16V | C517 | 1-164-182-11 | CERAMIC CHIP | 0.0033MF 10% 50V |
| C264 | 1-164-505-11 | CERAMIC CHIP | 2.2MF 16V | C518 | 1-104-665-11 | ELECT | 100MF 20% 10V |
| C265 | 1-164-505-11 | CERAMIC CHIP | 2.2MF 16V | C519 | 1-102-212-00 | CERAMIC | 820PF 10% 500V |
| C301 | 1-126-935-11 | ELECT | 470MF 20% 16V | C521 | 1-126-934-11 | ELECT | 220MF 20% 16V |
| C302 | 1-163-005-11 | CERAMIC CHIP | 470PF 10% 50V | C522 | 1-126-933-11 | ELECT | 100MF 20% 16V |
| C303 | 1-126-964-11 | ELECT | 10MF 20% 50V | C523 | 1-102-002-00 | CERAMIC | 680PF 10% 500V |
| C304 | 1-126-967-11 | ELECT | 47MF 20% 50V | C524 | 1-126-967-11 | ELECT | 47MF 20% 50V |
| C305 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% 25V | C526 | 1-130-495-00 | MYLAR | 0.1MF 5% 50V |
| C306 | 1-163-233-11 | CERAMIC CHIP | 18PF 5% 50V | C527 | 1-102-820-00 | CERAMIC | 330PF 5% 50V |
| C307 | 1-163-233-11 | CERAMIC CHIP | 18PF 5% 50V | C528 | 1-162-134-11 | CERAMIC | 470PF 10% 2KV |
| C308 | 1-163-259-91 | CERAMIC CHIP | 220PF 5% 50V | C530 | 1-137-372-11 | FILM | 0.022MF 5% 50V |
| C309 | 1-126-957-11 | ELECT | 0.22MF 20% 50V | C531 | 1-126-961-11 | ELECT | 2.2MF 20% 50V |
| C310 | 1-126-963-11 | ELECT | 4.7MF 20% 50V | C532 | 1-126-941-11 | ELECT | 470MF 20% 25V |
| C311 | 1-126-964-11 | ELECT | 10MF 20% 50V | C533 | 1-126-941-11 | ELECT | 470MF 20% 25V |
| C312 | 1-164-346-11 | CERAMIC CHIP | 1MF 16V | C536 | 1-136-165-00 | FILM | 0.1MF 5% 50V |
| C313 | 1-164-346-11 | CERAMIC CHIP | 1MF 16V | C537 | 1-126-969-11 | ELECT | 220MF 20% 50V |
| C315 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% 25V | C538 | 1-136-076-00 | FILM | 0.0085MF 3% 2KV |
| C316 | 1-126-967-11 | ELECT | 47MF 20% 50V | C539 | 1-129-746-91 | FILM | 0.039MF 5% 400V |
| C317 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% 25V | C540 | 1-136-171-00 | FILM | 0.33MF 5% 50V |
| C318 | 1-163-031-11 | CERAMIC CHIP | 0.01MF 50V | C546 | 1-165-319-11 | CERAMIC CHIP | 0.1MF 50V |
| C319 | 1-163-031-11 | CERAMIC CHIP | 0.01MF 50V | C549 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF 10% 50V |
| C320 | 1-163-031-11 | CERAMIC CHIP | 0.01MF 50V | C550 | 1-106-220-00 | MYLAR | 0.1MF 10% 100V |
| C322 | 1-163-005-11 | CERAMIC CHIP | 470PF 10% 50V | C551 | 1-126-960-11 | ELECT | 1MF 20% 50V |
| C324 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF 10% 50V | C552 | 1-162-116-00 | CERAMIC | 680PF 10% 2KV |
| C325 | 1-126-960-11 | ELECT | 1MF 20% 50V | C553 | 1-162-116-00 | CERAMIC | 680PF 10% 2KV |
| C327 | 1-126-965-11 | ELECT | 22MF 20% 50V | C554 | 1-137-417-11 | MYLAR | 0.0047MF 10% 200V |
| C328 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% 25V | C556 | 1-126-941-11 | ELECT | 470MF 20% 25V |
| C330 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% 25V | C557 | 1-126-941-11 | ELECT | 470MF 20% 25V |
| C331 | 1-247-807-31 | CARBON | 100 5% 1/4W | C558 | 1-123-024-21 | ELECT | 33MF 160V |
| C332 | 1-126-963-11 | ELECT | 4.7MF 20% 50V | C560 | 1-102-228-00 | CERAMIC | 470PF 10% 500V |
| C335 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% 25V | C561 | 1-136-557-11 | FILM | 0.0033MF 5% 630V |
| C336 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% 25V | C562 | 1-102-228-00 | CERAMIC | 470PF 10% 500V |
| C337 | 1-126-961-11 | ELECT | 2.2MF 20% 50V | C564 | 1-163-038-91 | CERAMIC CHIP | 0.1MF 25V |
| C338 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF 10% 50V | C565 | 1-107-655-11 | ELECT | 47MF 20% 250V |
| C341 | 1-115-340-11 | CERAMIC CHIP | 0.22MF 10% 25V | C566 | 1-102-244-00 | CERAMIC | 220PF 10% 500V |
| C342 | 1-163-259-91 | CERAMIC CHIP | 220PF 5% 50V | C567 | 1-115-521-11 | FILM | 0.82MF 5% 250V |
| C401 | 1-164-346-11 | CERAMIC CHIP | 1MF 16V (KV- TF21M61/TF21M90 ONLY) | C568 | 1-102-228-00 | CERAMIC | 470PF 10% 500V |
| C402 | 1-164-346-11 | CERAMIC CHIP | 1MF 16V | C570 | 1-115-520-11 | FILM | 0.68MF 5% 250V |
| C403 | 1-163-005-11 | CERAMIC CHIP | 470PF 10% 50V (KV- TF21M61/TF21M90 ONLY) | C573 | 1-106-379-12 | MYLAR | 0.033MF 10% 200V |
| C404 | 1-163-005-11 | CERAMIC CHIP | 470PF 10% 50V | C574 | 1-107-636-11 | ELECT | 10MF 20% 160V |
| C405 | 1-126-935-11 | ELECT | 470MF 20% 16V | C576 | 1-130-495-00 | MYLAR | 0.1MF 5% 50V |
| C406 | 1-164-346-11 | CERAMIC CHIP | 1MF 16V (KV- TF21M61/TF21M90 ONLY) | C577 | 1-106-395-00 | MYLAR | 0.15MF 10% 200V |
| C407 | 1-164-346-11 | CERAMIC CHIP | 1MF 16V | C582 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% 25V |
| C408 | 1-163-133-00 | CERAMIC CHIP | 470PF 5% 50V | C600 \triangle | 1-104-705-51 | FILM | 0.1MF 20% 250V |
| | | | | C602 \triangle | 1-104-705-51 | FILM | 0.1MF 20% 250V |
| | | | | | | (KV-TF21P11 ONLY) | |
| | | | | C604 | 1-163-009-11 | CERAMIC CHIP | 0.001MF 10% 50V |

A (Except KV-PF21M70)

| REF. NO. | PART NO. | DESCRIPTION | REMARK |
|----------|-----------------------|---|-------------------|
| C605 | Δ 1-127-942-51 | CERAMIC | 330PF 10% 250V |
| C606 | Δ 1-127-942-51 | CERAMIC | 330PF 10% 250V |
| C607 | 1-161-830-00 | CERAMIC | 0.0047MF 99% 500V |
| C608 | 1-161-830-00 | CERAMIC | 0.0047MF 99% 500V |
| C609 | 1-126-968-11 | ELECT | 100MF 20% 50V |
| C610 | 1-126-964-11 | ELECT | 10MF 20% 50V |
| C611 | 1-161-830-00 | CERAMIC | 0.0047MF 99% 500V |
| C612 | 1-161-830-00 | CERAMIC | 0.0047MF 99% 500V |
| C613 | 1-117-752-11 | ELECT(BLOCK) | 330MF 20% 450V |
| C614 | 1-126-964-11 | ELECT | 10MF 20% 50V |
| C616 | 1-130-202-00 | FILM | 0.022MF 10% 400V |
| C617 | 1-107-792-11 | CERAMIC | 100PF 5% 1KV |
| C618 | 1-125-893-11 | FILM | 680PF 3% 1.5KV |
| C619 | Δ 1-119-886-51 | CERAMIC | 470PF 10% 250V |
| C620 | 1-163-133-00 | CERAMIC CHIP | 470PF 5% 50V |
| C621 | 1-102-114-00 | CERAMIC | 470PF 10% 50V |
| C622 | 1-102-074-00 | CERAMIC | 0.001MF 10% 50V |
| C623 | 1-104-665-11 | ELECT | 100MF 20% 25V |
| C624 | 1-104-331-11 | CERAMIC | 0.0022MF 10% 1KV |
| C627 | 1-102-002-00 | CERAMIC | 680PF 10% 500V |
| C628 | 1-126-942-61 | ELECT | 1000MF 20% 25V |
| C629 | 1-126-964-11 | ELECT | 10MF 20% 50V |
| C630 | 1-123-024-21 | ELECT | 33MF 160V |
| C633 | 1-104-999-11 | MYLAR | 0.1MF 10% 200V |
| C634 | 1-126-933-11 | ELECT | 100MF 20% 16V |
| C635 | 1-104-665-11 | ELECT | 100MF 20% 10V |
| C636 | 1-104-760-11 | CERAMIC CHIP | 0.047MF 10% 50V |
| C639 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% 25V |
| C640 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% 25V |
| C641 | 1-102-002-00 | CERAMIC | 680PF 10% 500V |
| C642 | 1-126-943-11 | ELECT | 2200MF 20% 25V |
| C643 | 1-104-665-11 | ELECT | 100MF 20% 10V |
| C644 | 1-104-331-11 | CERAMIC | 0.0022MF 10% 1KV |
| C645 | 1-137-605-11 | FILM | 0.01MF 10% 250V |
| C646 | 1-107-679-91 | ELECT | 10MF 20% 450V |
| C647 | 1-163-275-11 | CERAMIC CHIP | 0.001MF 5% 50V |
| C649 | 1-126-940-11 | ELECT | 330MF 20% 25V |
| C650 | 1-163-275-11 | CERAMIC CHIP | 0.001MF 5% 50V |
| C651 | 1-163-133-00 | CERAMIC CHIP | 470PF 5% 50V |
| C652 | 1-126-965-11 | ELECT | 22MF 20% 50V |
| C653 | 1-104-664-11 | ELECT | 47MF 20% 25V |
| C657 | 1-101-821-00 | CERAMIC | 0.0022MF 500V |
| C658 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% 25V |
| C901 | 1-136-153-00 | FILM | 0.01MF 5% 50V |
| C902 | 1-136-153-00 | FILM | 0.01MF 5% 50V |
| C905 | 1-126-963-11 | ELECT | 4.7MF 20% 50V |
| C906 | 1-164-346-11 | CERAMIC CHIP | 1MF 16V |
| C907 | 1-163-133-00 | CERAMIC CHIP | 470PF 5% 50V |
| C908 | 1-163-133-00 | CERAMIC CHIP (KV-TF21M61/TF21M90 ONLY) | 470PF 5% 50V |
| C909 | 1-164-346-11 | CERAMIC CHIP (KV-TF21M61/TF21M90 ONLY) | 1MF 16V |
| C910 | 1-126-967-11 | ELECT | 47MF 20% 50V |
| C911 | 1-126-967-11 | ELECT | 47MF 20% 50V |
| C912 | 1-164-004-11 | CERAMIC CHIP | 0.1MF 10% 25V |
| C913 | 1-126-933-11 | ELECT | 100MF 20% 16V |
| C914 | 1-163-133-00 | CERAMIC CHIP | 470PF 5% 50V |

| REF. NO. | PART NO. | DESCRIPTION | REMARK |
|----------|----------------|---|----------|
| | | <CONNECTOR> | |
| CN104 | 1-695-915-11 | TAB (CONTACT) | |
| CN202 | * 1-785-608-11 | PIN, CONNECTOR 4P | |
| CN203 | * 1-564-506-11 | PLUG, CONNECTOR 3P | |
| CN204 | * 1-564-506-11 | PLUG, CONNECTOR 3P | |
| CN301 | * 1-774-813-11 | CONNECTOR, BOARD TO BOARD 7P (KV-TF21M61/TF21P11 ONLY) | |
| CN305 | * 1-564-509-11 | PLUG, CONNECTOR 6P | |
| CN307 | * 1-774-813-11 | CONNECTOR, BOARD TO BOARD 7P (KV-TF21M61/TF21P11 ONLY) | |
| CN505 | 1-508-765-00 | PIN, CONNECTOR (5MM PITCH) 3P | |
| CN506 | 4-352-844-01 | PIN, LEAD, COATING | |
| CN507 | * 1-564-507-11 | PLUG, CONNECTOR 4P | |
| CN601 | * 1-580-843-11 | PIN, CONNECTOR (POWER) | |
| CN602 | * 1-508-786-00 | PIN, CONNECTOR (5MM PITCH) 2P | |
| CN604 | * 1-573-963-11 | PIN, CONNECTOR (PC BOARD) 3P | |
| CN609 | * 1-508-784-21 | PIN, CONNECTOR (5MM PITCH) 1P | |
| CN901 | * 1-564-507-11 | PLUG, CONNECTOR 4P | |
| | | <DIODE> | |
| D001 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D005 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D006 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D100 | 8-719-404-50 | DIODE MA111-TX (KV-TF21M61/TF21M90 ONLY) | |
| D203 | 8-719-914-42 | DIODE DA204K | |
| D300 | 1-216-295-91 | SHORT 0 | |
| D301 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D306 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D307 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D308 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D309 | 8-719-159-10 | DIODE RD5.1SB-T2 | |
| D311 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D312 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D313 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D314 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D315 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D316 | 8-719-069-57 | DIODE UDZS-TE17-6.8B | |
| D401 | 8-719-158-35 | DIODE RD9.1SB (KV-TF21M61/TF21M90 ONLY) | |
| D402 | 8-719-158-35 | DIODE RD9.1SB | |
| D403 | 8-719-158-35 | DIODE RD9.1SB | |
| D404 | 8-719-158-35 | DIODE RD9.1SB (KV-TF21M61/TF21M90 ONLY) | |
| D405 | 8-719-158-35 | DIODE RD9.1SB | |
| D406 | 8-719-158-35 | DIODE RD9.1SB | |
| D504 | 8-719-302-43 | DIODE EL1Z | |
| D505 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D506 | 8-719-911-19 | DIODE 1SS119-25 | |
| D507 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D508 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D509 | 1-216-073-00 | RES.CHIP 10K | 5% 1/10W |
| D510 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D511 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D512 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D513 | 8-719-908-03 | DIODE GP08D | |
| D517 | 8-719-945-80 | DIODE ERC06-15S | |
| D518 | 8-719-900-26 | DIODE ERD29-08J | |

A (Except KV-PF21M70)

| REF. NO. | PART NO. | DESCRIPTION | REMARK | REF. NO. | PART NO. | DESCRIPTION | REMARK |
|----------|----------------|---|--------|----------|--------------|---|--------|
| D521 | 8-719-302-43 | DIODE EL1Z | | FB611 | 1-410-397-21 | FERRITE 1.1UH | |
| D522 | 8-719-302-43 | DIODE EL1Z | | FB613 | 1-410-397-21 | FERRITE 1.1UH | |
| D523 | 8-719-302-43 | DIODE EL1Z | | FB615 | 1-410-397-21 | FERRITE 1.1UH | |
| D527 | 8-719-908-03 | DIODE GP08D | | | | | |
| D528 | 8-719-908-03 | DIODE GP08D | | | | <IC> | |
| D531 | 8-719-988-61 | DIODE 1SS355TE-17 | | IC001 | 8-752-906-21 | IC CXP86449-623S | |
| D532 | 8-719-988-61 | DIODE 1SS355TE-17 | | IC002 | 8-759-371-21 | IC MM1319AFBE | |
| D602 | 8-719-911-19 | DIODE 1SS119-25 | | IC003 | 8-759-370-34 | IC ST24C08FB6 | |
| D603 | 8-719-150-92 | DIODE RD33EB3T | | IC100 | 8-759-042-02 | IC S-80743AL-A7-S (KV-TF21M61/TF21M90 ONLY) | |
| D604 | 8-719-028-72 | DIODE RGP02-17EL-6433 | | IC201 | 8-759-339-60 | IC TA8248K | |
| D605 | 8-719-510-53 | DIODE D4SB60L | | IC203 | 8-759-553-40 | IC TDA7429S | |
| D606 | 8-719-108-18 | THYRISTOR 5P6M | | IC301 | 8-752-088-39 | IC CXA2130S | |
| D607 | 8-719-404-50 | DIODE MA111-TX | | IC502 | 8-759-700-07 | IC NJM2903M | |
| D608 | 8-719-110-53 | DIODE RD20ESB2 | | IC503 | 8-759-980-58 | IC TDA8172 | |
| D609 | 8-719-311-31 | DIODE RU-1P | | IC601 | 8-749-013-75 | IC STR-F6654 | |
| D610 | 8-719-043-76 | DIODE AK04V0 | | IC602 | 8-749-920-61 | IC SE-135N | |
| D611 | 8-719-046-74 | DIODE AU-01Z-V1 | | IC603 | 8-759-701-59 | IC NJM78M09FA | |
| D613 | 8-719-046-74 | DIODE AU-01Z-V1 | | IC604 | 8-759-231-53 | IC TA7805S | |
| D614 | 8-719-046-74 | DIODE AU-01Z-V1 | | IC901 | 8-742-014-11 | HYB IC SBX1981-51 | |
| D618 | 8-719-067-18 | DIODE RN4Z | | | | | |
| D620 | 8-719-110-72 | DIODE RD30ESB2 | | | | <JACK> | |
| D622 | 8-719-071-39 | DIODE FMU-G26S | | J401 | 1-779-850-11 | JACK BLOCK, PIN 6P (KV-TF21M61/TF21M90) | |
| D623 | 8-719-978-65 | DIODE DTZ-TT11-15B | | J401 | 1-779-849-11 | JACK BLOCK, PIN 4P (KV-TF21P11) | |
| D624 | 8-719-404-50 | DIODE MA111-TX | | J901 | 1-770-786-11 | JACK | |
| D625 | 8-719-158-39 | DIODE RD10SB | | J902 | 1-770-329-11 | JACK, PIN 3P (KV-TF21M61/TF21M90) | |
| D627 | 8-719-073-84 | DIODE 31DQ06-FC5 | | J902 | 1-779-205-11 | JACK, PIN 2P (KV-PF21P11) | |
| D628 | 8-719-911-19 | DIODE 1SS119-25 | | | | <CHIP CONDUCTOR> | |
| D631 | 8-719-068-00 | DIODE ERC04-06SE | | JR002 | 1-216-295-91 | SHORT 0 | |
| D632 | 8-719-068-00 | DIODE ERC04-06SE | | JR003 | 1-216-295-91 | SHORT 0 | |
| D633 | 8-719-948-45 | DIODE ERA22-08 | | JR004 | 1-216-295-91 | SHORT 0 | |
| D634 | 8-719-404-50 | DIODE MA111-TX | | JR005 | 1-216-295-91 | SHORT 0 | |
| D635 | 8-719-404-50 | DIODE MA111-TX | | JR006 | 1-216-295-91 | SHORT 0 | |
| D636 | 8-719-510-02 | DIODE D1NS4 | | JR007 | 1-216-295-91 | SHORT 0 | |
| D637 | 8-719-109-96 | DIODE RD6.8ESB1 | | JR008 | 1-216-295-91 | SHORT 0 | |
| D638 | 8-719-510-48 | DIODE D1N20R | | JR009 | 1-216-295-91 | SHORT 0 | |
| D901 | 8-719-158-35 | DIODE RD9.1SB | | JR010 | 1-216-295-91 | SHORT 0 | |
| D902 | 8-719-158-35 | DIODE RD9.1SB | | JR011 | 1-216-295-91 | SHORT 0 | |
| D903 | 8-719-158-35 | DIODE RD9.1SB (KV-TF21M61/TF21M90 ONLY) | | JR012 | 1-216-295-91 | SHORT 0 | |
| D904 | 8-719-158-35 | DIODE RD9.1SB | | JR013 | 1-216-295-91 | SHORT 0 | |
| D905 | 8-719-158-35 | DIODE RD9.1SB | | JR014 | 1-216-295-91 | SHORT 0 | |
| D906 | 8-719-045-19 | DIODE SPB-26MVWF | | JR015 | 1-216-295-91 | SHORT 0 | |
| | | <CONNECTOR> | | JR016 | 1-216-295-91 | SHORT 0 | |
| DY1 | * 1-580-798-11 | CONNECTOR PIN (DY) 6P | | JR018 | 1-216-295-91 | SHORT 0 | |
| | | <FERRITE BEAD> | | JR019 | 1-216-295-91 | SHORT 0 | |
| FB103 | 1-410-397-21 | FERRITE 1.1UH | | JR102 | 1-216-295-91 | SHORT 0 | |
| FB501 | 1-410-397-21 | FERRITE 1.1UH | | JR107 | 1-216-295-91 | SHORT 0 | |
| FB502 | 1-410-397-21 | FERRITE 1.1UH | | | | (KV-TF21M61/TF21M90 ONLY) | |
| FB600 | 1-410-397-21 | FERRITE 1.1UH | | JR109 | 1-216-295-91 | SHORT 0 (KV-TF21P11 ONLY) | |
| FB601 | 1-410-397-21 | FERRITE 1.1UH | | JR202 | 1-216-295-91 | SHORT 0 | |
| FB602 | 1-410-397-21 | FERRITE 1.1UH | | JR301 | 1-216-295-91 | SHORT 0 | |
| FB603 | 1-410-397-21 | FERRITE 1.1UH | | JR303 | 1-216-295-91 | SHORT 0 | |
| FB604 | 1-410-397-21 | FERRITE 1.1UH | | JR401 | 1-216-295-91 | SHORT 0 | |
| FB607 | 1-410-397-21 | FERRITE 1.1UH | | | | (KV-TF21M61/TF21M90 ONLY) | |
| FB608 | 1-412-911-31 | FERRITE 0UH | | JR403 | 1-216-295-91 | SHORT 0 | |
| | | | | | | (KV-TF21M61/TF21M90 ONLY) | |

The components identified by shading
and mark \triangle are critical for safety.
Replace only with part number specified.

A (Except KV-PF21M70)

| REF. NO. | PART NO. | DESCRIPTION | REMARK | REF. NO. | PART NO. | DESCRIPTION | REMARK |
|-------------------|--------------|----------------------------|--------|------------|--------------|---------------------------|---------------|
| JR404 | 1-216-295-91 | SHORT | 0 | Q207 | 8-729-421-19 | TRANSISTOR UN2213 | |
| JR405 | 1-216-295-91 | SHORT | 0 | Q301 | 8-729-216-22 | TRANSISTOR 2SA1162-G | |
| JR500 | 1-216-295-91 | SHORT | 0 | Q302 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | |
| JR501 | 1-216-295-91 | SHORT | 0 | Q303 | 8-729-216-22 | TRANSISTOR 2SA1162-G | |
| JR600 | 1-216-295-91 | SHORT | 0 | Q305 | 8-729-216-22 | TRANSISTOR 2SA1162-G | |
| <COIL> | | | | Q306 | 8-729-216-22 | TRANSISTOR 2SA1162-G | |
| L002 | 1-414-856-11 | INDUCTOR | 10UH | Q307 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | |
| L003 | 1-414-180-11 | INDUCTOR | 3.3UH | Q308 | 8-729-216-22 | TRANSISTOR 2SA1162-G | |
| L005 | 1-414-233-22 | INDUCTOR CHIP | 0UH | Q312 | 8-729-216-22 | TRANSISTOR 2SA1162-G | |
| L101 | 1-414-856-11 | INDUCTOR | 10UH | Q313 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | |
| L102 | 1-414-856-11 | INDUCTOR | 10UH | Q315 | 8-729-421-19 | TRANSISTOR UN2213 | |
| L103 | 1-414-856-11 | INDUCTOR | 10UH | Q401 | 8-729-424-67 | TRANSISTOR UN2216 | |
| L104 | 1-414-856-11 | INDUCTOR | 10UH | Q402 | 8-729-424-67 | TRANSISTOR UN2216 | |
| L105 | 1-414-856-11 | INDUCTOR | 10UH | | | (KV-TF21M61/TF21M90 ONLY) | |
| L204 | 1-414-856-11 | INDUCTOR | 10UH | Q403 | 8-729-216-22 | TRANSISTOR 2SA1162-G | |
| L301 | 1-414-189-31 | INDUCTOR | 100UH | | | (KV-TF21M61/TF21M90 ONLY) | |
| L302 | 1-414-185-41 | INDUCTOR | 22UH | Q404 | 8-729-216-22 | TRANSISTOR 2SA1162-G | |
| L501 | 1-412-525-31 | INDUCTOR | 10UH | Q503 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | |
| L502 | 1-422-613-11 | COIL, AIR CORE | | Q505 | 8-729-931-45 | TRANSISTOR IRF614 | |
| L503 | 1-412-525-31 | INDUCTOR | 10UH | Q506 | 8-729-140-96 | TRANSISTOR 2SD774-34 | |
| L504 | 1-412-525-31 | INDUCTOR | 10UH | Q507 | 8-729-216-22 | TRANSISTOR 2SA1162-G | |
| L505 | 1-412-525-31 | INDUCTOR | 10UH | Q509 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | |
| L506 | 1-412-525-31 | INDUCTOR | 10UH | Q511 | 8-729-048-07 | TRANSISTOR 2SD2578-CA | |
| L507 | 1-459-111-00 | INDUCTOR | 10MMH | Q601 | 8-729-023-22 | TRANSISTOR 2SD2114K | |
| L508 | 1-412-525-31 | INDUCTOR | 10UH | Q602 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | |
| L509 | 1-459-390-00 | INDUCTOR | 390UH | Q603 | 8-729-424-08 | TRANSISTOR UN2111 | |
| L510 | 1-416-972-11 | COIL, HORIZONTAL LINEARITY | | Q604 | 8-729-200-17 | TRANSISTOR 2SA1091-O | |
| L512 | 1-412-549-31 | INDUCTOR | 1MMH | Q605 | 8-729-044-30 | TRANSISTOR 2SK2845-LB102 | |
| L513 | 1-412-549-31 | INDUCTOR | 1MMH | Q606 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | |
| L515 | 1-459-104-00 | COIL, WITH CORE | | Q607 | 8-729-922-37 | TRANSISTOR 2SD2144S-UVW | |
| L518 | 1-408-611-31 | INDUCTOR | 47UH | Q608 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | |
| L601 | 1-412-527-11 | INDUCTOR | 15UH | Q901 | 8-729-421-19 | TRANSISTOR UN2213 | |
| L901 | 1-408-603-31 | INDUCTOR | 10UH | Q902 | 8-729-421-19 | TRANSISTOR UN2213 | |
| L902 | 1-408-603-31 | INDUCTOR | 10UH | <RESISTOR> | | | |
| L905 | 1-414-856-11 | INDUCTOR | 10UH | R001 | 1-414-233-22 | INDUCTOR CHIP | 0UH |
| <PHOTO COUPLER> | | | | R002 | 1-216-025-91 | RES,CHIP | 100 5% 1/10W |
| PH600 \triangle | 8-749-924-35 | PHOTO COUPLER ON3171-R | | R003 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W |
| <IC LINK> | | | | R004 | 1-216-025-91 | RES,CHIP | 100 5% 1/10W |
| PS200 | 1-532-675-21 | LINK, IC 1.5A/150V | | R005 | 1-216-025-91 | RES,CHIP | 100 5% 1/10W |
| <TRANSISTOR> | | | | R007 | 1-216-295-91 | SHORT | 0 |
| Q002 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | | R008 | 1-216-065-91 | RES,CHIP | 4.7K 5% 1/10W |
| Q003 | 8-729-424-08 | TRANSISTOR UN2111 | | R010 | 1-216-065-91 | RES,CHIP | 4.7K 5% 1/10W |
| Q004 | 8-729-421-22 | TRANSISTOR UN2211 | | R011 | 1-216-065-91 | RES,CHIP | 4.7K 5% 1/10W |
| Q101 | 8-729-230-49 | TRANSISTOR 2SC2712-YG | | R012 | 1-216-065-91 | RES,CHIP | 4.7K 5% 1/10W |
| Q201 | 8-729-424-67 | TRANSISTOR UN2216 | | R013 | 1-216-065-91 | RES,CHIP | 4.7K 5% 1/10W |
| Q202 | 8-729-424-67 | TRANSISTOR UN2216 | | R014 | 1-216-025-91 | RES,CHIP | 100 5% 1/10W |
| Q203 | 8-729-421-19 | TRANSISTOR UN2213 | | R015 | 1-216-025-91 | RES,CHIP | 100 5% 1/10W |
| Q204 | 8-729-216-22 | TRANSISTOR 2SA1162-G | | R016 | 1-216-025-91 | RES,CHIP | 100 5% 1/10W |
| Q205 | 8-729-421-19 | TRANSISTOR UN2213 | | R017 | 1-216-049-91 | RES,CHIP | 1K 5% 1/10W |
| Q206 | 8-729-421-19 | TRANSISTOR UN2213 | | R018 | 1-216-033-00 | RES,CHIP | 220 5% 1/10W |
| | | | | R019 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W |
| | | | | R021 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W |
| | | | | R022 | 1-216-033-00 | RES,CHIP | 220 5% 1/10W |
| | | | | R024 | 1-216-057-00 | RES,CHIP | 2.2K 5% 1/10W |
| | | | | R025 | 1-216-057-00 | RES,CHIP | 2.2K 5% 1/10W |
| | | | | R026 | 1-216-057-00 | RES,CHIP | 2.2K 5% 1/10W |

A (Except KV-PF21M70)

| REF. NO. | PART NO. | DESCRIPTION | REMARK | REF. NO. | PART NO. | DESCRIPTION | REMARK |
|----------|--------------|---------------------------|--------|----------|--------------|---------------------------|--------|
| R027 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W | R225 | 1-216-033-00 | RES,CHIP 220 5% | 1/10W |
| R028 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W | R226 | 1-216-033-00 | RES,CHIP 220 5% | 1/10W |
| | | (KV-TF21M61/TF21M90 ONLY) | | R227 | 1-216-033-00 | RES,CHIP 220 5% | 1/10W |
| R029 | 1-216-049-91 | RES,CHIP 1K 5% | 1/10W | R228 | 1-249-389-11 | CARBON 4.7 5% | 1/4W |
| | | | | | | (KV-TF21M61/TF21M90 ONLY) | |
| R031 | 1-216-049-91 | RES,CHIP 1K 5% | 1/10W | R229 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W |
| R035 | 1-216-025-91 | RES,CHIP 100 5% | 1/10W | R230 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W |
| R036 | 1-216-025-91 | RES,CHIP 100 5% | 1/10W | R231 | 1-216-295-91 | SHORT 0 | |
| R037 | 1-216-025-91 | RES,CHIP 100 5% | 1/10W | R234 | 1-249-389-11 | CARBON 4.7 5% | 1/4W |
| R040 | 1-216-025-91 | RES,CHIP 100 5% | 1/10W | R235 | 1-216-069-00 | RES,CHIP 6.8K 5% | 1/10W |
| | | | | R236 | 1-216-069-00 | RES,CHIP 6.8K 5% | 1/10W |
| R041 | 1-216-025-91 | RES,CHIP 100 5% | 1/10W | R237 | 1-216-308-00 | RES,CHIP 4.7 5% | 1/10W |
| R042 | 1-216-295-91 | SHORT 0 | | R301 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W |
| R043 | 1-216-049-91 | RES,CHIP 1K 5% | 1/10W | R302 | 1-216-295-91 | SHORT 0 | |
| R044 | 1-216-025-91 | RES,CHIP 100 5% | 1/10W | R303 | 1-216-049-91 | RES,CHIP 1K 5% | 1/10W |
| R045 | 1-414-233-22 | INDUCTOR CHIP 0UH | | R304 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W |
| | | | | | | | |
| R046 | 1-216-049-91 | RES,CHIP 1K 5% | 1/10W | R305 | 1-216-051-00 | RES,CHIP 1.2K 5% | 1/10W |
| R047 | 1-414-233-22 | INDUCTOR CHIP 0UH | | R306 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W |
| R048 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W | R307 | 1-216-295-91 | SHORT 0 | |
| R050 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W | R308 | 1-216-025-91 | RES,CHIP 100 5% | 1/10W |
| R053 | 1-216-049-91 | RES,CHIP 1K 5% | 1/10W | R309 | 1-216-025-91 | RES,CHIP 100 5% | 1/10W |
| | | | | | | | |
| R055 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W | R310 | 1-216-025-91 | RES,CHIP 100 5% | 1/10W |
| R056 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W | R311 | 1-216-017-91 | RES,CHIP 47 5% | 1/10W |
| R061 | 1-216-033-00 | RES,CHIP 220 5% | 1/10W | R312 | 1-216-041-00 | RES,CHIP 470 5% | 1/10W |
| R062 | 1-216-041-00 | RES,CHIP 470 5% | 1/10W | R313 | 1-216-053-00 | RES,CHIP 1.5K 5% | 1/10W |
| R063 | 1-216-037-00 | RES,CHIP 330 5% | 1/10W | R314 | 1-216-045-00 | RES,CHIP 680 5% | 1/10W |
| | | | | | | | |
| R064 | 1-216-037-00 | RES,CHIP 330 5% | 1/10W | R316 | 1-216-053-00 | RES,CHIP 1.5K 5% | 1/10W |
| R065 | 1-216-037-00 | RES,CHIP 330 5% | 1/10W | R317 | 1-216-077-00 | RES,CHIP 15K 5% | 1/10W |
| R066 | 1-216-049-91 | RES,CHIP 1K 5% | 1/10W | R318 | 1-216-051-00 | RES,CHIP 1.2K 5% | 1/10W |
| R101 | 1-216-025-91 | RES,CHIP 100 5% | 1/10W | R319 | 1-216-025-91 | RES,CHIP 100 5% | 1/10W |
| | | (KV-TF21M61/TF21M90 ONLY) | | R320 | 1-216-065-91 | RES,CHIP 4.7K 5% | 1/10W |
| R102 | 1-216-025-91 | RES,CHIP 100 5% | 1/10W | | | | |
| | | (KV-TF21M61/TF21M90 ONLY) | | | | | |
| | | | | R321 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W |
| R105 | 1-216-295-91 | SHORT 0 | | R322 | 1-216-033-00 | RES,CHIP 220 5% | 1/10W |
| R109 | 1-216-041-00 | RES,CHIP 470 5% | 1/10W | R326 | 1-216-295-91 | SHORT 0 | |
| R111 | 1-216-025-91 | RES,CHIP 100 5% | 1/10W | R331 | 1-216-295-91 | SHORT 0 | |
| R112 | 1-216-025-91 | RES,CHIP 100 5% | 1/10W | R332 | 1-216-033-00 | RES,CHIP 220 5% | 1/10W |
| R113 | 1-216-047-91 | RES,CHIP 820 5% | 1/10W | | | | |
| | | | | | | | |
| R202 | 1-216-077-00 | RES,CHIP 15K 5% | 1/10W | R333 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W |
| R203 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W | R334 | 1-216-129-00 | RES,CHIP 2.2M 5% | 1/10W |
| R204 | 1-216-077-00 | RES,CHIP 15K 5% | 1/10W | R335 | 1-216-045-00 | RES,CHIP 680 5% | 1/10W |
| R205 | 1-216-077-00 | RES,CHIP 15K 5% | 1/10W | R338 | 1-216-033-00 | RES,CHIP 220 5% | 1/10W |
| R206 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W | R340 | 1-216-025-91 | RES,CHIP 100 5% | 1/10W |
| | | | | | | | |
| R207 | 1-216-077-00 | RES,CHIP 15K 5% | 1/10W | R345 | 1-216-081-00 | RES,CHIP 22K 5% | 1/10W |
| R208 | 1-216-071-00 | RES,CHIP 8.2K 5% | 1/10W | R348 | 1-216-675-11 | METAL CHIP 10K 0.50% | 1/10W |
| R209 | 1-216-071-00 | RES,CHIP 8.2K 5% | 1/10W | R349 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W |
| R211 | 1-216-033-00 | RES,CHIP 220 5% | 1/10W | R350 | 1-216-061-00 | RES,CHIP 3.3K 5% | 1/10W |
| R212 | 1-216-033-00 | RES,CHIP 220 5% | 1/10W | R351 | 1-216-053-00 | RES,CHIP 1.5K 5% | 1/10W |
| | | | | | | | |
| R213 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W | R354 | 1-216-057-00 | RES,CHIP 2.2K 5% | 1/10W |
| R214 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W | R355 | 1-216-057-00 | RES,CHIP 2.2K 5% | 1/10W |
| R215 | 1-216-059-00 | RES,CHIP 2.7K 5% | 1/10W | R356 | 1-216-057-00 | RES,CHIP 2.2K 5% | 1/10W |
| R216 | 1-216-059-00 | RES,CHIP 2.7K 5% | 1/10W | R357 | 1-216-079-00 | RES,CHIP 18K 5% | 1/10W |
| R217 | 1-216-067-00 | RES,CHIP 5.6K 5% | 1/10W | R358 | 1-216-049-91 | RES,CHIP 1K 5% | 1/10W |
| | | | | | | | |
| R218 | 1-216-067-00 | RES,CHIP 5.6K 5% | 1/10W | R359 | 1-216-033-00 | RES,CHIP 220 5% | 1/10W |
| R219 | 1-216-025-91 | RES,CHIP 100 5% | 1/10W | R360 | 1-216-033-00 | RES,CHIP 220 5% | 1/10W |
| R220 | 1-216-025-91 | RES,CHIP 100 5% | 1/10W | R361 | 1-216-073-00 | RES,CHIP 10K 5% | 1/10W |
| R221 | 1-216-295-91 | SHORT 0 | | R362 | 1-216-075-00 | RES,CHIP 12K 5% | 1/10W |
| R222 | 1-216-295-91 | SHORT 0 | | R363 | 1-216-079-00 | RES,CHIP 18K 5% | 1/10W |
| | | (KV-TF21M61/TF21M90 ONLY) | | | | | |

A (Except KV-PF21M70)

| REF. NO. | PART NO. | DESCRIPTION | REMARK | REF. NO. | PART NO. | DESCRIPTION | REMARK |
|----------|--------------|---------------------------|--------|----------|--------------|-------------|--------|
| R364 | 1-216-295-91 | SHORT | 0 | R536 | 1-216-067-00 | RES,CHIP | 5.6K |
| R365 | 1-216-033-00 | RES,CHIP | 220 | R537 | 1-216-683-11 | METAL CHIP | 22K |
| R366 | 1-216-073-00 | RES,CHIP | 10K | R540 | 1-216-065-91 | RES,CHIP | 4.7K |
| R367 | 1-216-073-00 | RES,CHIP | 10K | R541 | 1-216-065-91 | RES,CHIP | 4.7K |
| R370 | 1-216-033-00 | RES,CHIP | 220 | R542 | 1-216-295-91 | SHORT | 0 |
| R375 | 1-216-025-91 | RES,CHIP | 100 | R543 | 1-249-426-11 | CARBON | 5.6K |
| | | (KV-TF21M61/TF21P11 ONLY) | | R545 | 1-216-077-00 | RES,CHIP | 15K |
| R376 | 1-216-081-00 | RES,CHIP | 22K | R546 | 1-216-077-00 | RES,CHIP | 15K |
| R377 | 1-216-121-91 | RES,CHIP | 1M | R547 | 1-216-085-00 | RES,CHIP | 33K |
| R378 | 1-216-031-00 | RES,CHIP | 180 | R549 | 1-215-451-00 | METAL | 18K |
| R401 | 1-216-049-91 | RES,CHIP | 1K | | | | |
| | | (KV-TF21M61/TF21M90 ONLY) | | R550 | 1-216-097-91 | RES,CHIP | 100K |
| R402 | 1-216-073-00 | RES,CHIP | 10K | R551 | 1-249-421-11 | CARBON | 2.2K |
| | | (KV-TF21M61/TF21M90 ONLY) | | R552 | 1-216-057-00 | RES,CHIP | 2.2K |
| R403 | 1-216-073-00 | RES,CHIP | 10K | R553 | 1-215-457-00 | METAL | 33K |
| | | (KV-TF21M61/TF21M90 ONLY) | | R554 | 1-215-457-00 | METAL | 33K |
| R404 | 1-216-073-00 | RES,CHIP | 10K | R556 | 1-215-437-00 | METAL | 4.7K |
| R405 | 1-216-049-91 | RES,CHIP | 1K | R558 | 1-249-421-11 | CARBON | 2.2K |
| R406 | 1-216-073-00 | RES,CHIP | 10K | R559 | 1-249-429-11 | CARBON | 10K |
| R407 | 1-216-049-91 | RES,CHIP | 1K | R560 | 1-216-073-00 | RES,CHIP | 10K |
| | | (KV-TF21M61/TF21M90 ONLY) | | R562 | 1-249-401-11 | CARBON | 47 |
| R408 | 1-216-049-91 | RES,CHIP | 1K | R565 | 1-216-073-00 | RES,CHIP | 10K |
| R409 | 1-216-041-00 | RES,CHIP | 470 | R567 | 1-216-105-91 | RES,CHIP | 220K |
| | | (KV-TF21M61/TF21M90 ONLY) | | R568 | 1-249-383-11 | CARBON | 1.5 |
| R410 | 1-216-113-00 | RES,CHIP | 470K | R570 | 1-216-069-00 | RES,CHIP | 6.8K |
| | | (KV-TF21M61/TF21M90 ONLY) | | R571 | 1-215-437-00 | METAL | 4.7K |
| R411 | 1-216-113-00 | RES,CHIP | 470K | | | | |
| R412 | 1-216-041-00 | RES,CHIP | 470 | R573 | 1-216-089-91 | RES,CHIP | 47K |
| R413 | 1-216-021-00 | RES,CHIP | 68 | R577 | 1-215-913-11 | METAL OXIDE | 220 |
| R414 | 1-216-113-00 | RES,CHIP | 470K | R578 | 1-216-369-00 | METAL OXIDE | 1 |
| R415 | 1-216-113-00 | RES,CHIP | 470K | R579 | 1-216-097-91 | RES,CHIP | 100K |
| | | (KV-TF21M61/TF21M90 ONLY) | | R580 | 1-216-699-11 | METAL CHIP | 100K |
| R416 | 1-216-077-00 | RES,CHIP | 15K | | | | |
| | | (KV-TF21M61/TF21M90 ONLY) | | R581 | 1-208-798-11 | RES,CHIP | 4.7K |
| R417 | 1-216-077-00 | RES,CHIP | 15K | R585 | 1-249-391-11 | CARBON | 6.8 |
| R418 | 1-216-113-00 | RES,CHIP | 470K | R588 | 1-215-888-00 | METAL OXIDE | 220 |
| R419 | 1-216-022-00 | RES,CHIP | 75 | R589 | 1-215-888-00 | METAL OXIDE | 220 |
| R426 | 1-216-033-00 | RES,CHIP | 220 | R590 | 1-215-465-00 | METAL | 68K |
| R505 | 1-216-099-00 | RES,CHIP | 120K | | | | |
| R506 | 1-216-085-00 | RES,CHIP | 33K | R591 | 1-260-288-11 | CARBON | 0.47 |
| R507 | 1-249-389-11 | CARBON | 4.7 | R593 | 1-260-288-11 | CARBON | 0.47 |
| R508 | 1-215-910-00 | METAL OXIDE | 68 | R594 | 1-260-288-11 | CARBON | 0.47 |
| R509 | 1-215-911-11 | METAL OXIDE | 100 | R596 | 1-215-922-11 | METAL OXIDE | 6.8K |
| R510 | 1-215-885-00 | METAL OXIDE | 68 | R597 | 1-247-750-11 | CARBON | 680 |
| R511 | 1-215-911-11 | METAL OXIDE | 100 | | | | |
| R516 | 1-216-081-00 | RES,CHIP | 22K | R598 | 1-249-438-11 | CARBON | 56K |
| R518 | 1-247-807-31 | CARBON | 100 | R599 | 1-249-389-11 | CARBON | 4.7 |
| R520 | 1-215-445-00 | METAL | 10K | R600 | 1-249-438-11 | CARBON | 56K |
| R522 | 1-216-675-11 | METAL CHIP | 10K | R601 | 1-249-418-11 | CARBON | 1.2K |
| R523 | 1-249-411-11 | CARBON | 330 | R602 | 1-249-389-11 | CARBON | 4.7 |
| R525 | 1-216-699-11 | METAL CHIP | 100K | | | | |
| R526 | 1-208-798-11 | RES,CHIP | 4.7K | R603 | 1-215-485-00 | METAL | 470K |
| R527 | 1-216-001-00 | RES,CHIP | 10 | R604 | 1-216-097-91 | RES,CHIP | 100K |
| R528 | 1-216-683-11 | METAL CHIP | 22K | R607 | 1-249-425-11 | CARBON | 4.7K |
| R529 | 1-216-635-11 | METAL CHIP | 220 | R608 | 1-240-205-91 | CARBON | 22M |
| R531 | 1-247-843-11 | CARBON | 3.3K | R609 | 1-216-057-00 | RES,CHIP | 2.2K |
| R533 | 1-249-417-11 | CARBON | 1K | | | | |
| R534 | 1-216-361-00 | METAL OXIDE | 0.22 | R610 | 1-216-073-00 | RES,CHIP | 10K |
| R535 | 1-216-067-00 | RES,CHIP | 5.6K | R611 | 1-216-089-91 | RES,CHIP | 47K |
| | | | | R612 | 1-216-045-00 | RES,CHIP | 680 |
| | | | | R614 | 1-216-041-00 | RES,CHIP | 470 |
| | | | | R615 | 1-216-350-11 | METAL OXIDE | 1.2 |
| | | | | | | | |
| | | | | R616 | 1-260-302-51 | CARBON | 6.8 |
| | | | | R617 | 1-247-791-91 | CARBON | 22 |

The components identified by shading
and mark \triangle are critical for safety.
Replace only with part number specified.

A (Except KV-PF21M70)

| REF. NO. | PART NO. | DESCRIPTION | REMARK |
|------------------|--------------|-------------|--|
| R619 | 1-260-128-11 | CARBON | 270K 5% 1/2W |
| R620 | 1-215-915-11 | METAL OXIDE | 470 5% 3W F |
| R622 | 1-216-400-11 | METAL OXIDE | 8.2 5% 3W F |
| R623 | 1-216-095-00 | RES,CHIP | 82K 5% 1/10W |
| R624 | 1-216-089-91 | RES,CHIP | 47K 5% 1/10W |
| R626 | 1-216-049-91 | RES,CHIP | 1K 5% 1/10W |
| R627 | 1-240-251-11 | CMT,MELF | 6.8 5% 10W |
| R629 | 1-247-747-11 | CARBON | 470 5% 1/2W F |
| R630 | 1-249-429-11 | CARBON | 10K 5% 1/4W F |
| R631 | 1-216-089-91 | RES,CHIP | 47K 5% 1/10W |
| R632 | 1-202-933-61 | FUSIBLE | 0.1 10% 1/2W F |
| R634 \triangle | 1-218-265-91 | METAL | 8.2M 5% 1W |
| R635 | 1-216-492-11 | METAL OXIDE | 82K 5% 3W F |
| R636 | 1-215-924-00 | METAL OXIDE | 15K 5% 3W F |
| R637 | 1-216-492-11 | METAL OXIDE | 82K 5% 3W F |
| R639 | 1-216-363-00 | METAL OXIDE | 0.33 5% 2W F |
| R640 | 1-249-415-11 | CARBON | 680 5% 1/4W |
| R641 | 1-216-362-11 | METAL OXIDE | 0.27 5% 2W F |
| R642 | 1-249-419-11 | CARBON | 1.5K 5% 1/4W |
| R643 | 1-247-843-11 | CARBON | 3.3K 5% 1/4W |
| R644 | 1-249-419-11 | CARBON | 1.5K 5% 1/4W |
| R646 | 1-215-924-00 | METAL OXIDE | 15K 5% 3W F |
| R647 | 1-249-401-11 | CARBON | 47 5% 1/4W |
| R648 | 1-216-057-00 | RES,CHIP | 2.2K 5% 1/10W |
| R649 | 1-249-417-11 | CARBON | 1K 5% 1/4W |
| R650 | 1-215-882-00 | METAL OXIDE | 22 5% 2W F |
| R652 | 1-215-900-11 | METAL OXIDE | 22K 5% 2W F |
| R653 | 1-215-873-00 | METAL OXIDE | 4.7K 5% 1W F |
| R657 | 1-260-127-11 | CARBON | 220K 5% 1/2W |
| R659 | 1-216-049-91 | RES,CHIP | 1K 5% 1/10W |
| R660 | 1-216-073-00 | RES,CHIP | 10K 5% 1/10W |
| R661 | 1-215-873-00 | METAL OXIDE | 4.7K 5% 1W F |
| R680 | 1-216-308-00 | RES,CHIP | 4.7 5% 1/10W |
| R901 | 1-249-411-11 | CARBON | 330 5% 1/4W |
| R902 | 1-249-411-11 | CARBON | 330 5% 1/4W (KV-TF21M61/TF21M90 ONLY) |
| R903 | 1-216-022-00 | RES,CHIP | 75 5% 1/10W |
| R904 | 1-216-033-00 | RES,CHIP | 220 5% 1/10W |
| R905 | 1-216-113-00 | RES,CHIP | 470K 5% 1/10W |
| R906 | 1-216-077-00 | RES,CHIP | 15K 5% 1/10W |
| R907 | 1-216-113-00 | RES,CHIP | 470K 5% 1/10W (KV-TF21M61/TF21M90 ONLY) |
| R908 | 1-216-077-00 | RES,CHIP | 15K 5% 1/10W (KV-TF21M61/TF21M90 ONLY) |
| R909 | 1-216-065-91 | RES,CHIP | 4.7K 5% 1/10W |
| R910 | 1-216-065-91 | RES,CHIP | 4.7K 5% 1/10W |
| R911 | 1-216-067-00 | RES,CHIP | 5.6K 5% 1/10W |
| R912 | 1-216-041-00 | RES,CHIP | 470 5% 1/10W |
| R913 | 1-216-049-91 | RES,CHIP | 1K 5% 1/10W |
| R914 | 1-216-055-00 | RES,CHIP | 1.8K 5% 1/10W |
| R915 | 1-216-061-00 | RES,CHIP | 3.3K 5% 1/10W |
| R916 | 1-216-017-91 | RES,CHIP | 47 5% 1/10W |
| R917 | 1-216-041-00 | RES,CHIP | 470 5% 1/10W |
| R918 | 1-216-041-00 | RES,CHIP | 470 5% 1/10W |

| REF. NO. | PART NO. | DESCRIPTION | REMARK |
|-------------------|--------------|---|--------|
| | | <RELAY> | |
| RY601 \triangle | 1-755-266-11 | RELAY, AC POWER | |
| | | <SWITCH> | |
| S502 | 1-572-707-11 | SWITCH, LEVER | |
| S600 \triangle | 1-571-433-21 | SWITCH, PUSH (AC POWER) | |
| S901 | 1-692-431-21 | SWITCH, TACTILE | |
| S902 | 1-692-431-21 | SWITCH, TACTILE | |
| S903 | 1-692-431-21 | SWITCH, TACTILE | |
| S904 | 1-692-431-21 | SWITCH, TACTILE | |
| S905 | 1-692-431-21 | SWITCH, TACTILE | |
| S906 | 1-692-431-21 | SWITCH, TACTILE | |
| S907 | 1-692-431-21 | SWITCH, TACTILE | |
| | | <TRANSFORMER> | |
| T501 | 1-437-195-11 | TRANSFORMER, HORIZONTAL DRIVE | |
| T503 \triangle | 1-453-293-11 | TRANSFORMER ASSY, FLYBACK (NX-1748/M3A4) | |
| T601 | 1-424-682-11 | TRANSFORMER, LINE FILTER | |
| T603 \triangle | 1-433-512-31 | TRANSFORMER, CONVERTER (SRT) | |
| T604 \triangle | 1-431-852-11 | TRANSFORMER, CONVERTER (SRT) | |
| | | <THERMISTOR> | |
| THP600 | 1-810-961-11 | THERMISTOR, POSITIVE | |
| | | <TUNER> | |
| TU101 | 8-598-451-00 | TUNER, FSS BTF-WG441 (KV-TF21M61/TF21M90) | |
| TU101 | 8-598-447-00 | TUNER, FSS BTF-LG411 (KV-TF21P110) | |
| | | <CRYSTAL> | |
| X001 | 1-579-125-11 | VIBRATOR, CERAMIC | |
| X301 | 1-781-134-21 | VIBRATOR, CRYSTAL | |
| X302 | 1-781-132-21 | VIBRATOR, CRYSTAL | |

The components identified by shading
and mark △ are critical for safety.
Replace only with part number specified.

C3 (KV-PF21M70)

| REF. NO. | PART NO. | DESCRIPTION | REMARK | | |
|-------------|----------------|---|----------|-----|------|
| | * A-1331-884-A | C3 BOARD, MOUNTED (KV-PF21M70) ***** | | | |
| | 7-682-948-01 | SCREW +PSW 3X8 | | | |
| <CAPACITOR> | | | | | |
| C701 | 1-115-350-51 | CERAMIC | 0.0047MF | | 2KV |
| C702 | 1-102-074-00 | CERAMIC | 0.001MF | 10% | 50V |
| C703 | 1-107-651-11 | ELECT | 4.7MF | 20% | 250V |
| C704 | 1-130-202-00 | FILM | 0.022MF | 5% | 400V |
| C706 | 1-104-664-11 | ELECT | 47MF | 20% | 16V |
| C708 | 1-102-114-00 | CERAMIC | 470PF | 10% | 50V |
| C709 | 1-102-114-00 | CERAMIC | 470PF | 10% | 50V |
| C710 | 1-102-114-00 | CERAMIC | 470PF | 10% | 50V |
| C712 | 1-102-116-00 | CERAMIC | 680PF | 10% | 50V |
| C713 | 1-102-116-00 | CERAMIC | 680PF | 10% | 50V |
| C714 | 1-102-116-00 | CERAMIC | 680PF | 10% | 50V |
| C716 | 1-126-933-11 | ELECT | 100MF | 20% | 16V |
| C717 | 1-101-880-00 | CERAMIC | 47PF | 5% | 50V |
| C736 | 1-102-114-00 | CERAMIC | 470PF | 10% | 50V |
| C737 | 1-102-114-00 | CERAMIC | 470PF | 10% | 50V |
| C746 | 1-102-114-00 | CERAMIC | 470PF | 10% | 50V |
| <CONNECTOR> | | | | | |
| CN701 | 1-508-765-00 | PIN, CONNECTOR (5MM PITCH) 3P | | | |
| CN702 | 1-695-915-11 | TAB (CONTACT) | | | |
| CN703 | * 1-564-509-11 | PLUG, CONNECTOR 6P | | | |
| CN704 | 1-695-915-11 | TAB (CONTACT) | | | |
| <DIODE> | | | | | |
| D701 | 8-719-911-19 | DIODE 1SS119-25 | | | |
| D702 | 8-719-911-19 | DIODE 1SS119-25 | | | |
| D703 | 8-719-911-19 | DIODE 1SS119-25 | | | |
| D707 | 8-719-911-19 | DIODE 1SS119-25 | | | |
| D708 | 8-719-911-19 | DIODE 1SS119-25 | | | |
| D709 | 8-719-911-19 | DIODE 1SS119-25 | | | |
| D710 | 8-719-911-19 | DIODE 1SS119-25 | | | |
| D711 | 8-719-911-19 | DIODE 1SS119-25 | | | |
| D712 | 8-719-911-19 | DIODE 1SS119-25 | | | |
| D713 | 8-719-911-19 | DIODE 1SS119-25 | | | |
| D714 | 8-719-911-19 | DIODE 1SS119-25 | | | |
| D715 | 8-719-911-19 | DIODE 1SS119-25 | | | |
| D716 | 8-719-911-19 | DIODE 1SS119-25 | | | |
| D717 | 8-719-121-26 | DIODE RD9.1ESL2 | | | |
| <JACK> | | | | | |
| J701 | △ 1-540-071-22 | SOCKET, CRT | | | |
| <COIL> | | | | | |
| L701 | 1-410-667-31 | INDUCTOR | 22UH | | |
| L710 | 1-408-609-41 | INDUCTOR | 33UH | | |
| L711 | 1-408-609-41 | INDUCTOR | 33UH | | |
| L712 | 1-408-609-41 | INDUCTOR | 33UH | | |

| REF. NO. | PART NO. | DESCRIPTION | | | | REMARK |
|--------------|--------------|------------------------|------|----|------|--------|
| <TRANSISTOR> | | | | | | |
| Q704 | 8-729-326-11 | TRANSISTOR 2SC2611 | | | | |
| Q705 | 8-729-326-11 | TRANSISTOR 2SC2611 | | | | |
| Q706 | 8-729-326-11 | TRANSISTOR 2SC2611 | | | | |
| Q707 | 8-729-200-17 | TRANSISTOR 2SA1091-O | | | | |
| Q708 | 8-729-200-17 | TRANSISTOR 2SA1091-O | | | | |
| Q709 | 8-729-200-17 | TRANSISTOR 2SA1091-O | | | | |
| Q710 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | | | | |
| Q711 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | | | | |
| Q712 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | | | | |
| <RESISTOR> | | | | | | |
| R703 | 1-249-496-11 | CARBON | 100K | 5% | 1/2W | |
| R705 | 1-216-380-11 | METAL OXIDE | 8.2 | 5% | 2W | F |
| R706 | 1-215-417-00 | METAL | 680 | 1% | 1/4W | |
| R707 | 1-215-413-00 | METAL | 470 | 1% | 1/4W | |
| R708 | 1-216-379-11 | METAL OXIDE | 6.8 | 5% | 2W | F |
| R710 | 1-215-922-11 | METAL OXIDE | 6.8K | 5% | 3W | F |
| R711 | 1-247-752-11 | CARBON | 1K | 5% | 1/2W | |
| R712 | 1-215-922-11 | METAL OXIDE | 6.8K | 5% | 3W | F |
| R713 | 1-247-752-11 | CARBON | 1K | 5% | 1/2W | |
| R714 | 1-215-922-11 | METAL OXIDE | 6.8K | 5% | 3W | F |
| R715 | 1-247-752-11 | CARBON | 1K | 5% | 1/2W | |
| R719 | 1-215-480-00 | METAL | 300K | 1% | 1/4W | |
| R720 | 1-249-923-11 | CARBON | 1K | 5% | 1/4W | F |
| R721 | 1-215-489-00 | METAL | 680K | 1% | 1/4W | |
| R722 | 1-249-923-11 | CARBON | 1K | 5% | 1/4W | F |
| R723 | 1-215-479-00 | METAL | 270K | 1% | 1/4W | |
| R724 | 1-249-923-11 | CARBON | 1K | 5% | 1/4W | F |
| R725 | 1-249-421-11 | CARBON | 2.2K | 5% | 1/4W | |
| R726 | 1-249-421-11 | CARBON | 2.2K | 5% | 1/4W | |
| R727 | 1-249-421-11 | CARBON | 2.2K | 5% | 1/4W | |
| R728 | 1-249-407-11 | CARBON | 150 | 5% | 1/4W | |
| R729 | 1-249-407-11 | CARBON | 150 | 5% | 1/4W | |
| R730 | 1-249-407-11 | CARBON | 150 | 5% | 1/4W | |
| R731 | 1-249-399-11 | CARBON | 33 | 5% | 1/4W | |
| R732 | 1-249-399-11 | CARBON | 33 | 5% | 1/4W | |
| R733 | 1-249-399-11 | CARBON | 33 | 5% | 1/4W | |
| R734 | 1-247-739-11 | CARBON | 100 | 5% | 1/2W | |
| R738 | 1-247-807-31 | CARBON | 100 | 5% | 1/4W | |
| R739 | 1-247-807-31 | CARBON | 100 | 5% | 1/4W | |
| R740 | 1-247-807-31 | CARBON | 100 | 5% | 1/4W | |
| R755 | 1-249-418-11 | CARBON | 1.2K | 5% | 1/4W | |
| R756 | 1-249-418-11 | CARBON | 1.2K | 5% | 1/4W | |
| R757 | 1-249-418-11 | CARBON | 1.2K | 5% | 1/4W | |

| | | | | | |
|---------------------|--------------|---------------------------|--|--|--|
| <VARIABLE RESISTOR> | | | | | |
| RV702 | 1-241-656-21 | RES, ADJ, METAL FILM 110M | | | |

The components identified by shading
and mark Δ are critical for safety.
Replace only with part number specified.

C5 (Except KV-PF21M70)

| REF. NO. | PART NO. | DESCRIPTION | REMARK |
|--|----------------|-------------------------------|----------|
| * A-1331-941-A C5 BOARD, MOUNTED (EXCEPT KV-PF21M70) | | | |
| ***** | | | |
| | 7-682-948-01 | SCREW +PSW 3X8 | |
| <CAPACITOR> | | | |
| C701 | 1-115-350-51 | CERAMIC 0.0047MF | 2KV |
| C702 | 1-102-074-00 | CERAMIC 0.001MF | 10% 50V |
| C703 | 1-107-651-11 | ELECT 4.7MF | 20% 250V |
| C704 | 1-130-202-00 | FILM 0.022MF | 5% 400V |
| C706 | 1-104-664-11 | ELECT 47MF | 20% 16V |
| C708 | 1-102-114-00 | CERAMIC 470PF | 10% 50V |
| C709 | 1-102-114-00 | CERAMIC 470PF | 10% 50V |
| C710 | 1-102-114-00 | CERAMIC 470PF | 10% 50V |
| C712 | 1-102-116-00 | CERAMIC 680PF | 10% 50V |
| C713 | 1-102-116-00 | CERAMIC 680PF | 10% 50V |
| C714 | 1-102-116-00 | CERAMIC 680PF | 10% 50V |
| C716 | 1-126-933-11 | ELECT 100MF | 20% 16V |
| C717 | 1-101-880-00 | CERAMIC 47PF | 5% 50V |
| C736 | 1-102-114-00 | CERAMIC 470PF | 10% 50V |
| C737 | 1-102-114-00 | CERAMIC 470PF | 10% 50V |
| C746 | 1-102-114-00 | CERAMIC 470PF | 10% 50V |
| C1803 | 1-126-964-11 | ELECT 10MF | 20% 50V |
| C1804 | 1-126-964-11 | ELECT 10MF | 20% 50V |
| C1809 | 1-126-942-61 | ELECT 1000MF | 20% 25V |
| <CONNECTOR> | | | |
| CN701 | 1-508-765-00 | PIN, CONNECTOR (5MM PITCH) 3P | |
| CN702 | 1-695-915-11 | TAB (CONTACT) | |
| CN703 | * 1-564-509-11 | PLUG, CONNECTOR 6P | |
| CN704 | 1-695-915-11 | TAB (CONTACT) | |
| CN1801 | * 1-564-507-11 | PLUG, CONNECTOR 4P | |
| CN1802 | * 1-564-506-11 | PLUG, CONNECTOR 3P | |
| <DIODE> | | | |
| D701 | 8-719-911-19 | DIODE 1SS119-25 | |
| D702 | 8-719-911-19 | DIODE 1SS119-25 | |
| D703 | 8-719-911-19 | DIODE 1SS119-25 | |
| D707 | 8-719-911-19 | DIODE 1SS119-25 | |
| D708 | 8-719-911-19 | DIODE 1SS119-25 | |
| D709 | 8-719-911-19 | DIODE 1SS119-25 | |
| D710 | 8-719-911-19 | DIODE 1SS119-25 | |
| D711 | 8-719-911-19 | DIODE 1SS119-25 | |
| D712 | 8-719-911-19 | DIODE 1SS119-25 | |
| D713 | 8-719-911-19 | DIODE 1SS119-25 | |
| D714 | 8-719-911-19 | DIODE 1SS119-25 | |
| D715 | 8-719-911-19 | DIODE 1SS119-25 | |
| D716 | 8-719-911-19 | DIODE 1SS119-25 | |
| D717 | 8-719-121-26 | DIODE RD9.1ESL2 | |
| D1803 | 8-719-911-19 | DIODE 1SS119-25 | |
| D1804 | 8-719-911-19 | DIODE 1SS119-25 | |
| D1808 | 8-719-908-03 | DIODE GP08D | |

| REF. NO. | PART NO. | DESCRIPTION | REMARK |
|--------------|-----------------------|------------------------|-----------|
| <IC> | | | |
| IC1800 | 8-759-822-38 | IC LA6510 | |
| <JACK> | | | |
| J701 | Δ 1-540-071-22 | SOCKET, CRT | |
| <COIL> | | | |
| L701 | 1-410-667-31 | INDUCTOR | 22UH |
| L710 | 1-408-609-41 | INDUCTOR | 33UH |
| L711 | 1-408-609-41 | INDUCTOR | 33UH |
| L712 | 1-408-609-41 | INDUCTOR | 33UH |
| <TRANSISTOR> | | | |
| Q704 | 8-729-326-11 | TRANSISTOR 2SC2611 | |
| Q705 | 8-729-326-11 | TRANSISTOR 2SC2611 | |
| Q706 | 8-729-326-11 | TRANSISTOR 2SC2611 | |
| Q707 | 8-729-200-17 | TRANSISTOR 2SA1091-O | |
| Q708 | 8-729-200-17 | TRANSISTOR 2SA1091-O | |
| Q709 | 8-729-200-17 | TRANSISTOR 2SA1091-O | |
| Q710 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q711 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q712 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q1802 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| <RESISTOR> | | | |
| R703 | 1-249-496-11 | CARBON 100K | 5% 1/2W |
| R705 | 1-216-380-11 | METAL OXIDE 8.2 | 5% 2W F |
| R706 | 1-215-417-00 | METAL 680 | 1% 1/4W |
| R707 | 1-215-413-00 | METAL 470 | 1% 1/4W |
| R708 | 1-216-379-11 | METAL OXIDE 6.8 | 5% 2W F |
| R710 | 1-215-922-11 | METAL OXIDE 6.8K | 5% 3W F |
| R711 | 1-247-752-11 | CARBON 1K | 5% 1/2W |
| R712 | 1-215-922-11 | METAL OXIDE 6.8K | 5% 3W F |
| R713 | 1-247-752-11 | CARBON 1K | 5% 1/2W |
| R714 | 1-215-922-11 | METAL OXIDE 6.8K | 5% 3W F |
| R715 | 1-247-752-11 | CARBON 1K | 5% 1/2W |
| R719 | 1-215-480-00 | METAL 300K | 1% 1/4W |
| R720 | 1-249-923-11 | CARBON 1K | 5% 1/4W F |
| R721 | 1-215-489-00 | METAL 680K | 1% 1/4W |
| R722 | 1-249-923-11 | CARBON 1K | 5% 1/4W F |
| R723 | 1-215-479-00 | METAL 270K | 1% 1/4W |
| R724 | 1-249-923-11 | CARBON 1K | 5% 1/4W F |
| R725 | 1-249-421-11 | CARBON 2.2K | 5% 1/4W |
| R726 | 1-249-421-11 | CARBON 2.2K | 5% 1/4W |
| R727 | 1-249-421-11 | CARBON 2.2K | 5% 1/4W |
| R728 | 1-249-407-11 | CARBON 150 | 5% 1/4W |
| R729 | 1-249-407-11 | CARBON 150 | 5% 1/4W |
| R730 | 1-249-407-11 | CARBON 150 | 5% 1/4W |
| R731 | 1-249-399-11 | CARBON 33 | 5% 1/4W |
| R732 | 1-249-399-11 | CARBON 33 | 5% 1/4W |
| R733 | 1-249-399-11 | CARBON 33 | 5% 1/4W |
| R734 | 1-247-739-11 | CARBON 100 | 5% 1/2W |
| R738 | 1-247-807-31 | CARBON 100 | 5% 1/4W |

The components identified by shading
and mark \triangle are critical for safety.
Replace only with part number specified.

C5 (Except KV-PF21M70)**F****V₁ (KV-TF21M61/
TF21P11 only)**

| REF. NO. | PART NO. | DESCRIPTION | REMARK |
|---------------------|----------------------------|---------------------------------|--------|
| R739 | 1-247-807-31 | CARBON 100 5% | 1/4W |
| R740 | 1-247-807-31 | CARBON 100 5% | 1/4W |
| R755 | 1-249-418-11 | CARBON 1.2K 5% | 1/4W |
| R756 | 1-249-418-11 | CARBON 1.2K 5% | 1/4W |
| R757 | 1-249-418-11 | CARBON 1.2K 5% | 1/4W |
| R1802 | 1-249-387-11 | CARBON 3.3 5% | 1/4W F |
| R1803 | 1-249-387-11 | CARBON 3.3 5% | 1/4W F |
| R1805 | 1-249-429-11 | CARBON 10K 5% | 1/4W |
| R1806 | 1-249-425-11 | CARBON 4.7K 5% | 1/4W |
| R1808 | 1-249-425-11 | CARBON 4.7K 5% | 1/4W |
| R1809 | 1-249-435-11 | CARBON 33K 5% | 1/4W |
| R1810 | 1-249-435-11 | CARBON 33K 5% | 1/4W |
| R1811 | 1-249-440-11 | CARBON 82K 5% | 1/4W |
| R1812 | 1-249-435-11 | CARBON 33K 5% | 1/4W |
| R1821 | 1-249-440-11 | CARBON 82K 5% | 1/4W |
| R1822 | 1-249-435-11 | CARBON 33K 5% | 1/4W |
| R1823 | 1-249-426-11 | CARBON 5.6K 5% | 1/4W |
| R1824 | 1-249-435-11 | CARBON 33K 5% | 1/4W |
| <VARIABLE RESISTOR> | | | |
| RV702 | 1-241-656-21 | RES, ADJ, METAL FILM 110M | |
| ***** | | | |
| * A-1241-355-A | F BOARD, MOUNTED | ***** | |
| 1-533-223-11 | CLIP, FUSE | | |
| * 4-374-846-01 | COVER, CAPACITOR, CAP TYPE | | |
| <CAPACITOR> | | | |
| C654 \triangle | 1-117-703-51 | CERAMIC 0.0047MF 99% | 250V |
| C4602 \triangle | 1-104-708-51 | FILM 0.47MF 20% | 250V |
| <CONNECTOR> | | | |
| CN4601* | 1-580-843-11 | PIN, CONNECTOR (POWER) | |
| CN4602* | 1-580-843-11 | PIN, CONNECTOR (POWER) | |
| CN4603 | 1-695-915-11 | TAB (CONTACT) | |
| <FUSE> | | | |
| F4601 \triangle | 1-532-237-11 | FUSE, TIME-LAG (BET) 3.15A/250V | |
| <RESISTOR> | | | |
| R4601 \triangle | 1-202-719-91 | SOLID 1M 10% | 1/2W |
| <TRANSFORMER> | | | |
| T4601 | 1-424-682-11 | TRANSFORMER, LINE FILTER | |
| T4602 | 1-424-682-11 | TRANSFORMER, LINE FILTER | |

| REF. NO. | PART NO. | DESCRIPTION | REMARK |
|---------------------------|--------------------|------------------------------|--------|
| <VARISTOR> | | | |
| VDR461 | 1-801-073-31 | VARISTOR TNR14V471K660 | |
| ***** | | | |
| * A-1347-155-A | V1 BOARD, COMPLETE | ***** | |
| (KV-TF21M61/TF21P11 ONLY) | | | |
| <CAPACITOR> | | | |
| C801 | 1-104-664-11 | ELECT 47MF 20% | 16V |
| C805 | 1-163-038-91 | CERAMIC CHIP 0.1MF | 25V |
| C806 | 1-163-038-91 | CERAMIC CHIP 0.1MF | 25V |
| C815 | 1-163-251-11 | CERAMIC CHIP 100PF 5% | 50V |
| C816 | 1-164-505-11 | CERAMIC CHIP 2.2MF | 16V |
| C817 | 1-164-004-11 | CERAMIC CHIP 0.1MF 10% | 25V |
| C818 | 1-163-239-11 | CERAMIC CHIP 33PF 5% | 50V |
| C820 | 1-163-239-11 | CERAMIC CHIP 33PF 5% | 50V |
| C821 | 1-163-038-91 | CERAMIC CHIP 0.1MF | 25V |
| C822 | 1-163-009-11 | CERAMIC CHIP 0.001MF 10% | 50V |
| C823 | 1-126-933-11 | ELECT 100MF 20% | 16V |
| C826 | 1-126-963-11 | ELECT 4.7MF 20% | 50V |
| C829 | 1-163-113-00 | CERAMIC CHIP 68PF 5% | 50V |
| C830 | 1-163-038-91 | CERAMIC CHIP 0.1MF | 25V |
| C831 | 1-126-933-11 | ELECT 100MF 20% | 16V |
| C832 | 1-126-964-11 | ELECT 10MF 20% | 50V |
| C835 | 1-163-038-91 | CERAMIC CHIP 0.1MF | 25V |
| C837 | 1-126-933-11 | ELECT 100MF 20% | 16V |
| <CONNECTOR> | | | |
| CN801 * | 1-774-812-11 | CONNECTOR, BOARD TO BOARD 7P | |
| CN803 * | 1-774-812-11 | CONNECTOR, BOARD TO BOARD 7P | |
| <DIODE> | | | |
| D802 | 8-719-914-44 | DIODE DAP202K | |
| D803 | 8-719-105-46 | DIODE RD3.3M-B2 | |
| D804 | 8-719-105-91 | DIODE RD5.6M-B2 | |
| D806 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D807 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| <FERRITE BEAD> | | | |
| FB801 | 1-410-397-21 | FERRITE 1.1UH | |
| FB802 | 1-410-397-21 | FERRITE 1.1UH | |
| FB803 | 1-410-397-21 | FERRITE 1.1UH | |
| FB804 | 1-410-682-31 | INDUCTOR 470UH | |
| FB805 | 1-410-397-21 | FERRITE 1.1UH | |
| <IC> | | | |
| IC801 | 8-759-476-87 | IC SAA5261 | |

The components identified by shading
and mark \triangle are critical for safety.
Replace only with part number specified.

V₁ (KV-TF21M61/
TF21P11 only)

| REF. NO. | PART NO. | DESCRIPTION | | REMARK | | REF. NO. | PART NO. | DESCRIPTION | | | REMARK | |
|------------------|--------------|-------------------------|------|--------|-------|----------------|---|--|------|----|--------|--|
| <CHIP CONDUCTOR> | | | | | | R850 | 1-216-105-91 | RES,CHIP | 220K | 5% | 1/10W | |
| JR801 | 1-216-295-91 | SHORT | 0 | | | R851 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W | |
| JR802 | 1-216-295-91 | SHORT | 0 | | | R853 | 1-216-067-00 | RES,CHIP | 5.6K | 5% | 1/10W | |
| JR804 | 1-216-295-91 | SHORT | 0 | | | R857 | 1-216-081-00 | RES,CHIP | 22K | 5% | 1/10W | |
| JR805 | 1-216-295-91 | SHORT | 0 | | | R858 | 1-216-067-00 | RES,CHIP | 5.6K | 5% | 1/10W | |
| JR806 | 1-216-295-91 | SHORT | 0 | | | R861 | 1-216-049-91 | RES,CHIP | 1K | 5% | 1/10W | |
| | | | | | | R862 | 1-260-095-11 | CARBON | 470 | 5% | 1/2W | |
| JR807 | 1-216-295-91 | SHORT | 0 | | | R863 | 1-216-049-91 | RES,CHIP | 1K | 5% | 1/10W | |
| JR808 | 1-216-295-91 | SHORT | 0 | | | R864 | 1-216-041-00 | RES,CHIP | 470 | 5% | 1/10W | |
| | | | | | | R866 | 1-215-880-00 | METAL OXIDE | 10 | 5% | 2W F | |
| <TRANSISTOR> | | | | | | R871 | 1-216-037-00 | RES,CHIP | 330 | 5% | 1/10W | |
| Q801 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | | R879 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W | |
| Q803 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | | R880 | 1-216-041-00 | RES,CHIP | 470 | 5% | 1/10W | |
| Q805 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | | R882 | 1-216-049-91 | RES,CHIP | 1K | 5% | 1/10W | |
| Q806 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | | R884 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W | |
| Q807 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | | R888 | 1-216-065-91 | RES,CHIP | 4.7K | 5% | 1/10W | |
| | | | | | | R889 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W | |
| Q808 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | | R890 | 1-216-081-00 | RES,CHIP | 22K | 5% | 1/10W | |
| Q810 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | | R894 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W | |
| Q811 | 8-729-019-01 | TRANSISTOR 2SD2394-EF | | | | R895 | 1-216-065-91 | RES,CHIP | 4.7K | 5% | 1/10W | |
| Q812 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | | | | | | | | |
| Q813 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | | R896 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W | |
| | | | | | | R897 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W | |
| Q814 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | | R898 | 1-216-065-91 | RES,CHIP | 4.7K | 5% | 1/10W | |
| Q817 | 8-729-900-53 | TRANSISTOR DTC114EK | | | | | | | | | | |
| Q818 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | | | | | | | | | | |
| <RESISTOR> | | | | | | | | | | | | |
| R800 | 1-216-675-11 | METAL CHIP | 10K | 0.50% | 1/10W | X801 | 1-578-774-11 | VIBRATOR, CRYSTAL | | | | |
| R801 | 1-216-295-91 | SHORT | 0 | | | ***** | | | | | | |
| R802 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W | | | | | | | |
| R803 | 1-216-295-91 | SHORT | 0 | | | | | | | | | |
| R804 | 1-216-295-91 | SHORT | 0 | | | | | | | | | |
| | | | | | | | | | | | | |
| R805 | 1-216-295-91 | SHORT | 0 | | | | | MISCELLANEOUS | | | | |
| R807 | 1-216-295-91 | SHORT | 0 | | | | | ***** | | | | |
| R813 | 1-216-295-91 | SHORT | 0 | | | | | | | | | |
| R820 | 1-216-073-00 | RES,CHIP | 10K | 5% | 1/10W | ⚠ 1-416-946-11 | COIL, DEMAGNETIC | | | | | |
| R821 | 1-216-083-00 | RES,CHIP | 27K | 5% | 1/10W | | 1-417-151-21 | MATCHING TRANSFORMER, ANTENNA (KV-PF21M70 ONLY) | | | | |
| | | | | | | | 1-452-014-11 | CIRCULAR DISC MAGNET B (KV-TF21P11) | | | | |
| R822 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W | | 1-452-032-00 | MAGNET,DISC | | | | |
| R824 | 1-216-295-91 | SHORT | 0 | | | | 1-452-094-00 | CIRCULAR DISC MAGNET B (EXCEPT KV-TF21P11) | | | | |
| R825 | 1-216-295-91 | SHORT | 0 | | | | | | | | | |
| R827 | 1-216-295-91 | SHORT | 0 | | | | | | | | | |
| R828 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W | | 1-452-728-61 | COIL, NA ROTATION (RT-154) (KV-TF21M61/TF21M90 ONLY) | | | | |
| | | | | | | | | | | | | |
| R829 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W | | 1-501-372-81 | ANTENNA, TELESCOPIC (KV-PF21M70 ONLY) | | | | |
| R830 | 1-216-295-91 | SHORT | 0 | | | | 1-505-740-11 | SPEAKER (5X9CM) | | | | |
| R831 | 1-216-295-91 | SHORT | 0 | | | ⚠ 1-574-062-11 | CORD, POWER (WITH CONNECTOR) 2.5A/250V (KV-TF21M61) | | | | | |
| R832 | 1-216-659-11 | METAL CHIP | 2.2K | 0.50% | 1/10W | ⚠ 1-574-358-11 | CORD, POWER (WITH CONNECTOR) (KV-TF21P11) | | | | | |
| R835 | 1-216-295-91 | SHORT | 0 | | | | | | | | | |
| | | | | | | | | | | | | |
| R839 | 1-216-655-11 | METAL CHIP | 1.5K | 0.50% | 1/10W | | | | | | | |
| R841 | 1-216-025-91 | RES,CHIP | 100 | 5% | 1/10W | ⚠ 1-769-609-21 | CORD, POWER (WITH CONNECTOR) (KV-PF21M70/TF21M90) | | | | | |
| R842 | 1-216-065-91 | RES,CHIP | 4.7K | 5% | 1/10W | | 8-451-505-11 | DEFLECTION YOKE (Y21RSA-S) | | | | |
| R843 | 1-216-065-91 | RES,CHIP | 4.7K | 5% | 1/10W | ⚠ 8-738-809-05 | PICTURE TUBE (A51LPT70X) (KV-PF21M70/TF21M90) | | | | | |
| R844 | 1-216-057-00 | RES,CHIP | 2.2K | 5% | 1/10W | ⚠ 8-738-812-05 | PICTURE TUBE (A51LPT70X) (KV-TF21M61/TF21P11) | | | | | |
| | | | | | | | | | | | | |
| R845 | 1-216-049-91 | RES,CHIP | 1K | 5% | 1/10W | | | | | | | |
| R846 | 1-216-049-91 | RES,CHIP | 1K | 5% | 1/10W | | | | | | | |
| R847 | 1-216-049-91 | RES,CHIP | 1K | 5% | 1/10W | | | | | | | |
| R848 | 1-216-049-91 | RES,CHIP | 1K | 5% | 1/10W | | | | | | | |
| R849 | 1-216-049-91 | RES,CHIP | 1K | 5% | 1/10W | | | | | | | |

| REF. NO. | PART NO. | DESCRIPTION | REMARK |
|-----------------------------------|--------------|--|--------|
| ACCESSORIES AND PACKING MATERIALS | | | |
| ***** | | | |
| | 1-417-151-21 | MATCHING TRANSFORMER, ANTENNA (KV-PF21M70 ONLY) | |
| | 1-501-372-81 | ANTENNA, TELESCOPIC (KV-PF21M70 ONLY) | |
| | 3-701-910-00 | SCREW, SPECIAL (DIA. 3.8X20) | |
| | 3-867-184-11 | MANUAL, INSTRUCTION (KV-PF21M70) | |
| | 3-866-883-11 | MANUAL, INSTRUCTION (KV-TF21M61) | |
| | 3-866-883-21 | MANUAL, INSTRUCTION (KV-TF21M90) | |
| | 3-866-883-31 | MANUAL, INSTRUCTION (KV-TF21P11) | |
| * | 4-070-297-01 | CUSHION(UPPER)(ASSY) | |
| * | 4-070-298-01 | CUSHION(LOWER)(ASSY) | |
| * | 4-070-299-01 | INDIVIDUAL CARTON | |
| | 4-392-003-11 | BAND, HOLD | |
| | 4-392-004-11 | CLIP | |
| * | 4-392-859-01 | BAG, PROTECTION | |
| ***** | | | |
| REMOTE COMMANDER | | | |
| ***** | | | |
| | 1-418-163-11 | REMOTE COMMANDER (RM-952) | |
| | 9-939-697-01 | BATTERY COVER, REMOTE COMMANDER | |